August 1950 25c

Organic Gardening

Gardening without Commercial Fertilizers

PURDUE UNIVERSITY
AUG 15 1950
LIBRARY

A MAGAZINE OF FLOWER CULTURE

Read these 3 Basic Books by J. I. RODALE

PAY DIRT

HERE is *the best guide to the organic movement.* The "bible" of thousands of gardeners, PAY DIRT points the way to proper farming and gardening methods, shows how the individual gardener can obtain bigger yields of disease-free plants, rich in health-giving qualities. Now in its ninth edition, PAY DIRT is still one of the most important books published in this country in years.

Next to the Atom Bomb, nothing else in the world is so serious as Man's ravishment of the earth that sustains him and keeps him from starvation. Even more than atomic energy, our topsoil could become beneficial to mankind if properly treated. PAY DIRT points the way to proper farming and gardening methods and is guaranteed to "give a case of the jitters to all back yard gardeners as well as . . . farmers who have been playing it the easy way by using chemical fertilizers. It will very well send them back to the compost heap."—*The New Yorker.* "Brings the all-important world problem of soil conservation into focus for the individual gardener."—*N. Y. Herald Tribune.* "An exciting book, both for the farmer and the gardener."—Richardson Wright, in *House and Garden.*

PAY DIRT is a natural for everyone who wants to adopt organiculture. Cloth, 252 pp. **$3.00**

THE HEALTHY HUNZAS

A BOOK about the inhabitants of the northwestern section of India who are astoundingly healthy because of the way they raise their food. A race of over 22,000 people, the Hunzas possess a bodily buoyancy that makes them unique among the world's national groups. Full details show how any gardener or farmer can apply the Hunza methods. Cloth, 263 pp., 20 full-page illustrations. **$3.00**

STONE MULCHING IN THE GARDEN

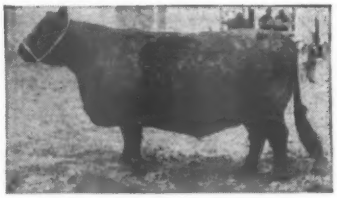
A NEW INVENTION in gardening! An authoritative guide to the use of stones and rocks for obtaining greater yields and healthier plants. This sensational but natural practice obviates digging, cultivating, hoeing, and weeding. Here is the most remarkable and promising cultural practice proposed in recent years. Cloth, 164 pp., 50 photos. **$3.00**

Order books on this page from
ORGANIC GARDENING
Dept. 8-G, Emmaus, Pa.

The amazing story of an organic farm

HUMUS and the FARMER

by FRIEND SYKES



TELLS how 750 "worthless acres" were changed into rich farm land by use of the organic method. Filled with graphic descriptions, illustrations, recommendations for making pastures, reclamation of waste or derelict lands, and increasing the water-holding capacity and productivity of the soil. The value of mixed farming and reforestation, the importance of the earthworm, and the mechanization of the compost method are all clearly explained.

Friend Sykes' account begins when what was regarded as one of the best herds in England proved, upon government inspection, to be 66% diseased—the result of deficiencies in the food plants. The herd was dispersed and the valuable farm land sold. Friend Sykes then purchased 750 acres of land on the Salisbury Plain which farmers round about considered practically worthless. He subsoiled it and fertilized with natural manures exclusively. Pasture and crop plants were grown which were rich in minerals and other nutrient materials.

As a result, the cattle and horses were maintained in health and vigor that had been hitherto unknown, and the land is now visited by outstanding agriculturists as one of the most interesting farms in England. 416 pages, 40 photos. **$4.50**

WEEDS ARE A BLESSING!

When you cultivate with the amazing new ROTO MILLER!*

NOW—This Revolutionary New Garden Tractor POWER COMPOSTS Weeds, Cover Crops, Mulch Material, Leaves, etc. into Rich, Natural Organic Fertilizer Right in Your Garden Itself!

FROM early spring to late fall, you can enrich your garden—restore poor land—*actually build lots of rich new topsoil*—if you have the Model-T ROTO-ETTE* with the ROTO MILLER attachment! Here's how you do it:

1. You don't just "cultivate"—You POWER COMPOST Your Weeds!

You ROTO MILL them into your soil while they are green and rich in chlorophyl and protein. You chop them up and mix them in where they hold moisture and provide ideal food for earthworms and microbial life. This enriches your soil and makes your crops grow far more bountifully. You can even POWER COMPOST your leaves in the fall!

2. POWER COMPOST COVER CROPS *All Summer Long!*

Whenever you have garden space not being used, or if you have an area of soil you want to improve, just sow a green manure crop of clover, soybeans, barley, rye or whatever you choose, and when it's a foot or so high, ROTO MILL it into the soil! You can even do this between your row crops—provided there is plenty of moisture.

3. POWER COMPOST GARBAGE!

Did you know that garbage is one of the richest fertilizers you can put in your garden—and will be ABSOLUTELY ODORLESS, too? It is, and it's a fine thing to be able to turn this waste material into something valuable. Here's how you do it:

For only $2.50, you can purchase a furrowing attachment to go with your Model-T ROTO-ETTE. With this you can quickly and easily dig a deep furrow the length or width of your garden. Then each day you simply dump your garbage in a foot or so of furrow length and cover it with the soil. When the first furrow has been completely filled, you dig another one, and in time cover your whole garden plot in this way. You can do this also *between* your row crops. You'll be amazed at how this increases the microbial and earthworm activity in your soil and how it makes things grow!

* Trade Mark Reg. U.S. Patent Office

Send Coupon for FREE BOOK!

Not only is the Model-T ROTO-ETTE with its ROTO MILLER attachment the *first*, but it's the *only* garden tractor that makes POWER COMPOSTING of all kinds practical. But there simply isn't room here to tell you all about this remarkable new machine—its amazingly low cost—details on the attachments, etc. So, we want to send you FREE a copy of POWER GARDENING AND POWER COMPOSTING by Ed Robinson, author of the famous "Have-More" Plan. It gives the whole exciting story. We'll gladly send you a copy FREE—we're so sure you will want one of our machines as soon as you've read it!

Just mail the coupon now and we'll send your copy of POWER GARDENING and POWER COMPOSTING—FREE—by return mail!

ROTOTILLER, INC.
Department OF-7, Troy, New York

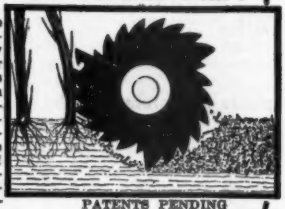
P.S. Even with production of the new Model T doubled, we're only beginning to catch up with orders. It's the smash hit of the 1950 garden year. If you think that at any time in the future you'll be buying a garden tractor, we urge you to send the coupon for the full story of the Model T now.

COMPOSTING by MACHINE Right In Your Garden Itself!

No more hauling, turning and watering of compost heaps! With this amazing new machine, you can easily chop and mix into your garden soil—without tangling: cover crops, mulches, manure, leaves, weeds, plant wastes of any kind—even cornstalks! Think what this means in labor saved, soil improvement, bountiful crops!

THE SMASH HIT of the 1950 Garden Year!

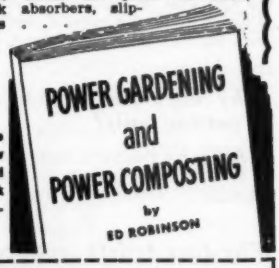
Here's the new Roto-miller—a rotary cam chopper that makes composting in your own garden by machine practical for the first time! The Roto-miller is shockless—tangleproof—unbreakable! It takes the place of tines, springs, shock absorbers, slipping clutches . . . an it does a better job!

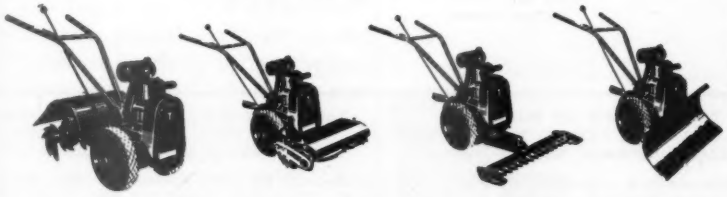


PATENTS PENDING

FREE!

Just mail the coupon now and we'll send your book FREE by return mail!





ONCE OVER and seedbed is ready to plant! Model T mills ground 16" wide and 4" deep. Plows and harrows in one operation.

"BEST POWER MOWER BUILT"—users say. No overhanging wheels—no untrimmed edges! Attachment follows contour perfectly!

UNEXCELLED FIELD MOWING—Nothing else like it for cutting hay, tall weeds and trash; does not clog in heavy growth.

YEAR-ROUND HELPER!—Model T converts to snowplow in 5 minutes. Other low-cost attachments: power saw, power cart, etc.

ROTO-ETTE Reg. U.S. Pat. Off.

ROTOTILLER, Inc.
Box OG-8,
Troy, New York

Please send me FREE by return mail a copy of POWER GARDENING and POWER COMPOSTING, by Ed Robinson.

Your name _____

Address _____

City _____

Zone _____ *State* _____

☐ Check here if you would like information about being a Rototiller Dealer. We have a few good territories still open.

NOW

Is The Time To Use ActivO

Now is the time to use ActivO on lawns, as top or side dressing, in mulches, etc. And now is the best time to make a compost.

Why does ActivO work so well on lawns?

Most lawns have "beaten up" soils—too much or too little water at the wrong time, too much chemical fertilizer, too much traffic, too little clipping mulch, deficiencies in nutrients and minerals, competition from trees for water and food, and the ULTRA-IMPORTANT **aeration** by earthworms and other soil life may be almost non-existent—there's scarcely a lawn that's not ailing somehow.

ActivO is Nature, packed in a can of moist, rich humus—Nature's wondrous and mysterious "biotics," her balancers and controllers; plus the vital hormones, vitamins and precious minerals; PLUS **the all-important beneficial micro-organisms** (billions of them) . . . the "engineers" and "manufacturers" of soil.

This ActivO team goes to work—to **energize** and **activate**, to **condition**, to **cancel deficiencies** and **increase enzyme action** . . . and the result is better aeration of an **active** and virile soil, and balanced control of plant food—a **harmonious** soil . . . in short, a BETTER soil that grows plants as Nature intends.

•

Why does ActivO work so well with mulches, top dressing, etc.?

For the same reasons given above—plus the fact that its energetic bacteria correctly break down the organic matter as nutrients are needed by the plant.

•

Why does ActivO add so much to potting soils?

Again for the same reasons. Soil **balance** is vital. Florists report almost astounding response in better blooming.

•

Why does ActivO produce so many more enzymes?

You get top enzyme production **only** thru **bacterial** action—fortified, controlled and modulated by hormones, vitamins, minerals and the biotical substances Neither sprouted cereals, yeast, **nor any single entity** can possibly do the job **right.**

ActivO is the result of years of research and experience. It isn't just "something else to sell." It isn't just a "copy." It's the product others **try** to imitate. ActivO is produced by those who pioneered the field.

BENSON-MACLEAN PLANT PRODUCTS
Bridgeton 14, Ind.

Organic Gardening

VOL. 17, NO. 2 AUGUST, 1950

IN THIS ISSUE

Forum		3
What's New At Home And In The Garden		12
The Putrefaction—Fermentation Fallacy	J. I. Rodale	14
Organic Landscape Gardening	Paul Pfund	16
There Are Profits In Mistakes—Part II	Leonard Wickenden	18
Moss Verbena	G. L. Wittrock	20
Prune With A Purpose	Fred O. Hoppe	21
Delphiniums In The Garden	William H. Eyster, Ph.D.	22
What Makes Your Vegetables Grow?	William Ackerman	24
Compost For The Small Home Garden	Otto Condermann	27
A Greenhouse In The Home	Carl Spatz	29
Florida's Stricken Waters—Part III	Edwin H. Abrams	30
Making Flowers And Plants Last Longer	Nash Chandler	32
Chemical Fertilizer Bill Passed		34
Pansies In Abundance	Esther T. Latting	37
Seminar On Phosphate	William Ackerman	38
Gourd Gardening	Jane Green	42
August Garden Calendar	William H. Eyster, Ph.D.	44
Miscellany	J. I. Rodale	46
The Soil and Health Foundation		48
Hints for the Flower Garden		49
Hints for the Vegetable Garden		50
Miracle Of The Mulches	J. Sydney Cates	51
Floral Arrangement	Ann Andrews	54
Readers' Correspondence		55
New Books		62
Button Bush		Inside Back Cover

COVER DESIGN for AUGUST

The golden sunflowers on the cover were painted by Mrs. Eleanor J. M. Barba, an outstanding artist of the Lehigh Valley of Pennsylvania. She has studied painting in the Munich Academy, as well as with George Grosz, Guy Pene du Bois, and Wyman Adams.

J. I. RODALE, *Editor and Publisher* JAMES F. BAIRD, JR., *Advertising Manager*
DR. WILLIAM H. EYSTER, *Managing Editor* KARL MANAHAN, *Art Director*
WILLIAM ACKERMAN, MS., *Associate Editor* ANN ANDREWS, *Flower Arrangement Editor*

Published monthly by ORGANIC GARDENING. Publication, Executive, Editorial and Subscription Offices: 6th and Minor Streets, Emmaus, Pa. Advertising Offices: 46 S. West St., Allentown, Pa. Subscription Rates, United States and Possessions, One Year $3.00, Two Years $5.00, Three Years $6.00. Unless otherwise directed all subscriptions begin with the current issue. Renewal subscriptions begin immediately after old subscription expires. When changing an address, give the old address as well as the new. Manuscripts should be accompanied by full return postage and a self-addressed envelope. Printed in the United States of America.

Copyright 1950 by ORGANIC GARDENING.

Entered as second class matter January 27, 1943, at the Post Office at Emmaus, Pa. : under the Act of March 3, 1879.

Growing Potatoes with Hay Mulch

I read the information on raising potatoes in compost, with a hay mulch, in the April issue of *Organic Gardening*. You asked for results on this method. I dug a trench 50 feet long and filled in with about eight inches of compost and planted the potatoes in that, covering with twelve inches of hay. The potatoes grew beautifully, came through the hay, with no potato bugs at all, and with only a few flea beetles.

About three weeks before the potatoes should have been dug, I noticed that a few plants were wilted, and so I investigated. I found that mice had tunnelled in, were nesting in the hay and eating the potatoes.

I dug up the potatoes, and obtained a full bushel of good sized, clean potatoes. We also obtained another half bushel, same size, but eaten by the mice, and another quarter bushel of small sized potatoes, which would have been larger had we been able to leave them in the ground three weeks longer.

The potatoes were planted late, and I suppose the mice were nesting for the winter. Is there any way in which the mice can be prevented from nesting? I can not use any poisons or other materials that might hurt my dogs.

This year I shall plant the potatoes as early as possible, and see if the potatoes can be grown full size before the mice start to nest. Would this not be the trouble in using mulches in other places in the garden?

In Mr. Rodale's new sheet composting method, he speaks of using weeds, etc., as a mulch or disked in; what happens to diseased plants? And would not the weed seeds

BETTER COMPOST BETTER SOIL

Prettier Flowers; Superior Vegetables and Fruits

Never Before A Product Like This!

- **Makes activated soil builder in 2 to 5 weeks!**
- **Encourages valuable earthworms.**
- **Induces enzyme action.**
- **Converts garbage into humus without odor!**
- **Activates and conditions soils! Aids mushroom growing.**
- **Energizes hot beds; even makes hot beds without manure!**
- **Converts waste into wealth at lowest cost—Nature's own organic bacterial way!**

Every gardener wants pretty flowers, lush lawns, more healthful vegetables and fruit. Wise organic gardeners know that the best and easiest and cheapest way to better gardens is thru compost-fed soil . . . that garbage makes richest humus . . . **THAT LEAVES ALONE ARE SUPERIOR IN FERTILIZER VALUES TO MANURE!**

But formerly it often required months or years to build rich soil. *Now* with *ActivO*, you can convert choice compost into fertilizer in as short a time as 2 weeks! And WITHOUT ODOR!

DON'T BURN LEAVES or throw away a cob or cornstalk or chicken bone! Use even sawdust and lint. Compost all such vegetable and animal waste with **ActivO**, the odorless, organic way. So **easy**, quick and low-cost! **No manure needed** . . . But composting is just one valuable use for ActivO:—

SOIL ACTIVATION: Use it to activate, condition and sweeten soil **directly.** Pops up sluggish soils. Try it!

HOT BEDS: Improve heating and nutrient release. Actually makes hot beds without manure!

HELPS OTHER AMAZING WAYS: ActivO reduces odor in outdoor toilets; converts the waste into an odorless, easily handled, ash-like soil builder . . **Mushroom growers** use it to aid nutrient release . . .It solves disposal problems for **canners, seedsmen, rabbit, poultry** and **dog** raisers—and for CITIES and INSTITUTIONS, saving taxpayers' money.

All this with organics! ActivO works **exactly like Nature** in turning organic matter into humus, **but many times faster**—the result of an unusual discovery in selecting strains of energetic organisms — scientifically propagated into billions, and packaged in moist soil-conditioner—**READY TO GO TO WORK FOR YOU ANY MONTH OF THE YEAR** . . . ActivO isn't an herb concoction; doesn't destroy earthworms or upset soil bacterial balance.

GARDENERS PRAISE IT! Tell how vegetables look and taste better . . . how beautiful flowers grow where nothing would grow before . . . A Missouri gardener writes, "Soil is 'cinders'. Had very dry summer, with hot winds in July. But has used ActivO compost . . . all crops look good; and dug 1½ bushels best potatoes in neighborhood from space only 15 x 12."

Another enthusiastically tells, almost unbelievingly, how he composts large quantities of manure, in a city backyard; without odor! Still another makes fertilizer in his basement, from **garbage.**

You will want to try this unusual product. Get some ActivO **today. TRY YOUR LOCAL OR CATALOG DEALER FIRST.** If your regular dealer doesn't have it, use coupon below. **Don't accept substitutes!** There's only one ActivO—only one organic bacterial product like this. Insist on **"Act-tive-Oh!"**

EXTRA!

GIVEN— ***Special Premium Award***

At no extra charge, with each order for a No. 25 size ActivO ($6.99) which treats up to 3½ tons of compost, we'll be happy to mail PLANS for building the popular **A-1 Composter Cabinet** like picture—blueprints with materials list and instructions. An ingenious way to turn garbage and waste disposal into garden profit.

Odorless, continuous process.

☐ **Check here if you want plans and No. 25 size ActivO, $6.99, prepaid.**

MAIL TO → **BENSON-MACLEAN PLANT PRODUCTS, Bridgeton 14, Ind.**
(Northeastern states, address ActivO—SOILSERVICE, Box 131, Townsend, Mass.)
(West Coast, ActivO-West, Box 227, Rivera, Calif.)

Inclosed is ..... for $ ..... Send the following:

Add 10% West of Rockies

☐ **FREE literature: ActivO and composting.**

☐ **No. 7 size, 1350-1700 lb. compost, at $2.00 ea. postpaid.**

☐ **No. 50 size, for 6½ tons, $11.95, freight collect, (free Cabinet plans).**

☐ **No. 100 size, for 12 tons compost, $19.95, freight collect, (free Cabinet plans).**

Prices do not include state sales taxes.

NAME ..... **SHIPPING POINT If different from P. O.**

ADDRESS .....

P. O. and State .....

Dealer's Name .....

And Address .....

"ACTO" in Canada

MORE THAN A COMPOST HASTENER!

ACTIVO

Yes! YOU CAN HAVE HEALTHY VIGOROUS PLANTS THE EASY WAY with Ko-K-O
50 Lbs Net Wt
HERSHEY'S Ko-KO
ORGANIC SOIL CONDITIONER & BUFFER
FOR LAWNS AND GARDENS
Made by HERSHEY Estates
HERSHEY PA
STORE IN COOL DRY PLACE
HERSHEY'S Ko-KO
HERSHEY'S Ko-KO
WHAT IS Ko-K-O?
Cocoa bean shells and other parts of the cocoa bean are blended expertly and sweetened to produce a natural, organic material that will furnish a steady source of humus for the soil.

FOR LAWNS AND GARDENS

- **Apply Direct to the Soil**
- **Mix in the Compost Heap**
- **FEED TO EARTHWORMS**

An essential material for the Organic Gardener ... A slow-acting, long-lasting energizer that increases and replenishes the organic content of the soil ... Improves soil texture ... absorbs and retains plant-nourishing moisture ... helps decomposition of soil break-up into humus ... binds sandy soil ... loosens clay soil.

Packed in Handy 50 Lb. Bags

If your dealer cannot supply you we will ship direct to you where Pick-up and Delivery is available; if not available shipped to nearest freight station. Freight prepaid East of Mississippi River. (Write for freight rates West of Miss. R.)

NEW LOW PRICE

Send $1.90 for each 50 lb. bag; enough for 200 sq. ft. of NEW lawn or garden. Minimum Shipment 100 lbs. (2 bags)

HERSHEY ESTATES
HERSHEY, PENNSYLVANIA

sprout? In a regular compost heap there is enough heat to destroy the weeds and the diseased plants. I can understand using alfalfa hay or clover, but I think weeds and diseased plants would not be wise. It might produce more nitrogen, but in other ways will it be safe?

It seems to me that it is a mistake to bury the Indore Method of making compost before the new methods are proven.

Would there be any danger in using rotted wood from very large chestnut trees, which died from the chestnut blight?

Ruth Ely,
94 Waterman St., Providence 6, R. I.

Editor's Note: *Planting the potatoes earlier doubtless would have prevented the trouble with the mice. The mulch of weeds must be applied thick enough to prevent the growth of weeds from seeds. Then too, the weeds for mulching should be cut before they go to seed.*

There is no need to discontinue the Indore Method if one has the time and facilities for making compost heaps.

Rotted wood from chestnut trees that have been killed by the chestnut blight can be used for compost or as a mulch without danger to any plant.

Vegetables and Flowering Tobacco

I straw mulched our three dozen tomato plants last year, and I was picking tomatoes the end of October and into November when both my neighbors had long before pulled up their plants. Our plants were huge and enormous and loaded with tomatoes. I planted them in compost I had made from leaves, lawn clippings and vegetable refuse. I did not dare use all the garbage as I knew my neighbors would complain.

And the nicotianas! If I hadn't been called to Boston in August, as my father was so ill, you would have received snapshots and a story about the nicotianas! Being my husband's favorite plant we had hundreds of them. Most of them grew at least four feet high and the plants were so vigorous they looked like the tobacco I saw as we drove through Connecticut. They also were planted in my compost. We used to sit out in the garden in the evening for their fragrance, but it came into the house as well.

Violet S. Schaffer (Mrs. H. M.)
7 S. Prospect, Bergenfield, N. J.

Chlorinated Water Affects Earthworms and Flower Color

I'm puzzled over seeing no references in *Organic Gardening* to the effect of chlorinated water on fishworms. This town is on one of New York City's water supply lakes. It draws from this lake, water which is tanked and treated separately. The local sellers of bait will tell you it kills fishworms—also minnows. At last reports the bait sellers in Brewster, four miles away, had not suspected the water but were puzzled as to what was killing their fishworms since that village began treating its water.

That is hearsay but seems to be pretty common knowledge. The following I know at first hand—the doctored Carmel water markedly changes the color of flowers. Last year was my first garden season with Carmel water after well water in the country. I brought with me over a hundred varieties of gladiolus, but found I couldn't recognize some varieties from the bloom. A drought year and much town water had been used.

Cut flowers gave final proof. With a number of varieties, one spike of each was put into a vase of town water, another in a vase of well water —spikes were cut with only the first one or two florets open. In the town water the remaining flowers when they opened were strikingly different in color, so that it looked like two varieties on one spike; in the well

(*Continued on page 6*)

UNEQUALED OFFERS
FOR AN UNRIVALED GARDEN!

GUARANTEED-TO-BLOOM DARWIN
TULIPS

Not tiny bulblets; they average 3" in circumference! Will continue to increase in size and quantity; bloom for years into large, long-stemmed Tulips of breath-taking beauty! Order these choice bulbs in a glorious Rainbow Mixture now — for planting this Fall!

100 bulbs $2.69

FREE! 50 SPRING-FLOWERING IMPORTED DUTCH CROCUS BULBS in exotic color mixture—with each 100 Tulip Bulb order!

Glorious Gold and Blue Spring-Flowering Combination!

DAFFODILS & NARCISSUS

Glowing shades of gold and yellows; for borders, rockeries, etc. Will multiply in ground; bloom profusely year after year!

100 bulbs $2.69

FREE! 50 IMPORTED DUTCH GRAPE HYACINTHS — deliciously fragrant; "Heavenly Blue" shade with each 100 Daffodil and Narcissus Bulb order! Plant in front of Daffodils for lovely gold and blue effect!

SPECIAL! ANY TWO $2.69 OFFERS FOR ONLY $5.00

GIANT GOLDEN TRUMPET
DAFFODILS

Huge, long-stemmed beauties; will bloom year after year, adding sunny color to your garden!

25 BULBS $1.69

FREE! 15 BLUE SPRING STAR FLOWER BULBS (Tritaleia)—sweet-scented, lavender-blue flowers, up to 2½" across on tall stems; with each 25 Daffodil Bulb order! Multiply rapidly in ground. Plant in front of Daffodils for a symphony of blue and gold.

GRACEFUL DUTCH
HYACINTHS

A profusion of lovely shades — especially effective in borders or beds!

15 BULBS $1.69

FREE! 12 DUTCH WOOD HYACINTHS (SCILLA)—pink, blue and white —with each 15 Dutch Hyacinth Bulb order! Perfect for planting in clusters or borders.

GIANT RED EMPEROR
TULIPS

Holland's supreme achievement; spectacular Darwins of tremendous size, often 9" across when open! Tall, sturdy, brilliant scarlet; your garden's crown jewels!

18 BULBS $1.69

FREE! 40 SNOWDROPS—dazzling white, star-shaped flowers — first heralds of Spring—with each 18 Red Emperor Tulip Bulb order!

SPECIAL! ANY THREE $1.69 OFFERS FOR ONLY $4.75

COMPLETE SPRING GARDEN SPECIAL!

All of above 5 offers totaling

425 BULBS...ONLY $9.00

FREE! with every $9.00 order—75 exotic Rock Garden Bulbs in exciting and colorful mixture; containing many rare and unusual flowers collected from Asia and Europe. Ideal for rock gardens, borders, scatter planting.

Compare and be convinced! These 500 bulbs are actually worth $17.00. Order now—you save $8.00!

Shipped postpaid East of Mississippi; elsewhere add 25c. Send check, M. O. or C. O. D.

FREE CATALOGUE ON REQUEST!

Beautifully illustrated in color; teeming with thriftwise garden specials!

U. S.-DUTCH BULB CORP.

220—Fifth Ave., Dept. F8 • New York 1, N. Y.

(*Continued from page 4*)

water there was no change. Later, when the first flowers were gone and only the changed color showed, in some cases people insisted the two spikes of the same variety were two different varieties.

In the fall of 1948, when I brought cut spikes here from the unimpregnated soil of the old place, the change on the individual spike was even more marked.

I should specify that red did not seem appreciably affected. Yellows were intensified and blues, lavenders, etc., were paled out. Whites were entirely unaffected so far as I could judge.

This may all be old stuff to you but, with so many being urged to fishworm culture, it would seem worth taking into consideration. Carmel water may, of course, get an extra heavy dose, but even a lighter dose wouldn't help the worms any. If interested in the formula used, you can probably get it from C. Hansen, Ass't. Engineer, Dept. of Carmel Office, New York City Water Supply, Carmel, New York.

Arthur S. Hoffman,
Carmel, New York

Leafmold and Straw Mulch

This fall I built a frame 4′ long, 2′ wide and 6″ high. Placing it at the start of a row I filled it with leaves and placed rocks on top of the leaves. Then I lifted the frame and repeated until I had a row 80′ long. Leaving an open row the width of the frame, I then put down another row of leaves and rock and continued to repeat until I had ten rows of rock and eight open rows.

This spring I will mix equal parts of limestone, cottonseed meal, and phosphate rock, spreading it over both the rock and open rows. This mixture will be worked into the open rows with a hoe and my vegetable plants set out under hotcaps. At the same time the row will be filled with a straw mulch. Seeds such as potatoes and corn will be planted under hotcaps and a straw mulch immediately put down. When the hotcaps are removed the straw mulch will be spread around the plants and in this way I hope to eliminate all cultivating. Using the same frame next fall, I will put the leaves and rock in this year's open rows and think I really will have something to grow vegetables in. Being a greenhorn at any kind of gardening, I would like your comments.

Incidentally, I own about 100 acres of virgin woodland mostly locust, and have been thinking of the possibility of grinding and selling the leaves from same. Can you give me any data on the preparing and marketing of this product?

J. Albert Baumgartner,
Baltimore, Maryland.

Editor's Note—There is a good de-

Tired of Raking Leaves? . . . . PULVERIZE THEM with

MOW-MASTER *Grind-a-Leaf*

The New Easy Way-- to KEEP YOUR YARD CLEAN . . . . . and FREE OF DRIFTING LEAVES

Here is the ideal answer to the leaf problem—the fast, effortless way to a beautiful, clean lawn through the autumn season. Saves hours of time and hard work. Pulverizes fallen leaves instantly—scatters them evenly over the ground forming a desirable mulch and adding plant food and humus to the soil. Completely eliminates the need to rake, haul or burn unwanted leaves.

MOW-MASTER Does All This and More - - -

In the Summer Time

MOW-MASTER Mows Lawns Velvety Smooth — Cuts Tall Grass and Weeds Easily. Simply remove Grind-a-Leaf attachment and you have the wonderful MOW-MASTER power mower.

Write for FREE literature and name of nearest dealer.

PROPULSION ENGINE CORP. Dept. OG-8
7th St. & Sunshine Rd. Kansas City 15, Kans.

mand for leafmold on the part of organic gardeners who cannot collect or make it themselves. Leaves are rich in plant nutrients, but should be finely shredded for quick decomposition.

Sand Mulch

Here is a hint for the gardener I noticed last year and I am going to try the same this year. Tomatoes, peppers, squashes, and cucumbers do a lot better when mulched with pure sand than when mulched with other material. I make the hills the usual way with compost and mulch them with an inch or two of sand. Then I plant the seed or plants. I don't cultivate, I just add more sand as needed. The sand will gradually disappear in the soil after rains and watering. I add more when needed. Insects can't dig in the sand like ordinary soil.

E. Simpkins,
15th St., Kenova, West Va.

Seaweed in Food

I am getting excellent results by mixing generous amounts of ground Gulf weed, plentiful at the beach, into my food. Tooth and gum troubles and spells of partial paralysis of the kneejoints from which I used to suffer as an after effect of complete paralysis in World War I are gone. This is better than little bought pills of Kelp or Dulse.

Hans Heuer,
P. O. B. 372, Melbourne, Fla.

Tin Cylinders for Transferring Tomatoes from Flat to Field

Every year I think of some new way of doing it, and this year here's the idea:

Since tomato plants waste several weeks in recovering from being transplanted, and since virus diseases enter roots damaged by transplanting, I'll plant seed "in place" in the field, mark the spots with painted short pieces of wire, and cultivate between the markers until the plants gain size to show where they are.

Wayside Gardens

Superior Quality
MAKES THE
DIFFERENCE

ENCHANTMENT

Year after year, Wayside experts select only superior quality stock to grow and develop into the guaranteed, top-quality items offered in the world's finest horticultural catalog. Wayside Gardens healthy *"Root-strength"* plants are rigorously tested and field grown for a minimum of 2 years.

For superlative garden beauty and complete satisfaction, plant superior Wayside stock.

Exciting New MID-CENTURY *Lilies*

The foolproof, hardy lilies everyone has been waiting for. They will grow, multiply and flourish in any garden. Sturdy plants bear huge, exquisitely colored flowers whose luminous radiance seems to glow from within. Our catalog lists 12 superb, distinct, easily grown varieties. Outstanding is *Enchantment*, first American lily ever to win the coveted British Lily Society Award.

SEND FOR THE WORLD'S FINEST HORTICULTURAL BOOK-CATALOG

Unquestionably, this is the finest catalog offered anywhere. Almost 200 pages filled with exciting new introductions and worthwhile old favorites, fully listed and illustrated in "true-to-life" colors. This splendid reference book contains explicit cultural directions and helpful garden hints. To be sure you get your copy, it is necessary that you enclose with your request 50¢, coin or stamps, for postage and handling costs.

90 MENTOR AVE. MENTOR, OHIO

Wayside Gardens

Beautiful Wild Flowers and Trees
FOR SPRING, SUMMER AND FALL PLANTING

White Hearts	White Violet	Yellow Violets
Fawn Lilies	Bishops Cap	Star Flower
Mayflowers	Shin Leaf	Polygala
Jack-in-the-pulpit	Large Flowered Lobelia	Columbine
Trillium	Blue Violet	Clintonia
Liatris	Anemone	Claytonia
Bellwort	Dwarf Dogwood	Golden Ragwort
Bloodroot	Wild Ginger	Evening Primrose
20c each	10 for $1.50	25 for $3.25

Trailing Arbutus——50 cents each • 3 for $1.25

Trees for Shade and Beauty

White or Paper Birch	Mountain Ash (3 to 4 ft.)	Basswood
Red Oak	American Elm	Soft Maple
Black Cherry	Sugar Maple	Quaking Aspen
Tamarack	Rock Elm	Balm of Gilead

All 4 to 5 ft. tall (except Mountain Ash) $1.00 each • 3 for $2.50

PAVEK NURSERY • WHITE LAKE WISCONSIN

Free Catalog of Wild Flowers and Plants

Earthworms

(Domesticated)

PLAN

Next Spring enrichment of your Garden

NOW

is the time to start saving Grass Clippings, Weeds, Leaves and other Vegetable matter

FOR

your Compost Pile for use in your Garden next Spring.

EARTHWORMS

fit in that plan. Order now, we will ship them when you need them. They are more valuable than other animals.

Free books with orders

400-500 Earthworms $2.75

FREE BOOK—Leaves and what they do.
or Compost, how to make it.

800-1000 Earthworms $4.75

FREE BOOK—The Compost Gardener.
or Our Friend the Earthworm.

Full instructions with each order. All orders prepaid East of Mississippi River. Add 10% west thereof.

Send for free copy of recently written treatise on EARTHWORMS.

ORGANIC GARDENS

Fullerton, Maryland

FALL BULBS

Tulips, Jonquils, Hyacinths and others

50 Large Tulip Bulbs $1.50
100 . . . . $2.50

A selection of the best Spring Flowering Bulbs $2.50
Worth $3.75

Postpaid

Order early as supply is limited
Ask for Catalog

ORGANIC GARDENS

Fullerton, Maryland

Kill Moles

WITH A

NASH TRAP

The safe, sure way. Can't poison soil. Saves your earthworms. Used by all informed mole control specialists. Works in any type of soil. Single traps at dealers or direct. $2.50 postpaid. C. O. D. fees extra. FREE—Mole control pamphlet. Nash Mole Traps, R.R. 1, Scotts, Michigan.

NASH Choker Loop TRAPS

That's all right for my main crop, but how about my early ones? Planting early seed wouldn't give me early tomatoes, for the seed wouldn't germinate until the ground warmed up; so there would be no early ones.

Nurseries are all set to raise plants which must be transplanted, and wouldn't bother with the scheme I have in mind. So I'll use a fresh compost heap for warmth, covering the plants when necessary. To house the individual plants, I collected empty tin cans and made them into tin collars by removing both bottoms and tops. Then I prepared soil such as is used in nurseries, half sifted compost and half sand, well mixed. This mixture was filled into propagating flats, perhaps 20 inches square and 3 inches deep, and the tin collars were pushed down through the dirt, and several seeds were scattered in each collar, to be covered about ¼" deep with baked sand. Watering is done here and there between the collars, using warm water every second or third morning; and after the plants have several leaves, a can or two of compost leachings is added to a pailful of water. When the plants are lusty enough to be set out under caps in the field, they are lifted out, collar and all, with a trowel, so as not to disturb the roots. Dirt is drawn around the collars to the same depth it was in the tray. With care, the collar may now be removed; but I prefer to leave it on all season, since it protects the young plant from sow bugs, cut worms, etc.

Alton L. Hall,
17331 Nichols Street,
Huntington Beach, California

The New Method in Humid South Africa

I have been a subscriber to your magazine *Organic Gardening* for a very long time, as I have complete faith and belief in the things you write about and we have found your new method of sheet composting excellent for this part of the world, which is very hot and humid in summer with a heavy rainfall, and cool and sunny with a little rain in the winter, but never frost or snow. Tea has been grown on this estate for the past 60 years—was started by my husband's grandfather and the erosion was very bad, but since my husband has become interested in organic farming things are looking much brighter for the future.

I have found your articles on Cancer so amazing and truthful that I took the liberty of having the one on polio and sugar published, being a sugar planter's wife. There was a reply from a sugar chemist admitting that refined sugar is not as healthy as the raw, and I feel all this propaganda will help the health of little children in this country. I am 34 years of age and have six children of my own, whose health is excellent as they are fed on compost grown food and are given no meat or refined foods of any kind to eat. They eat honey in place of sugar, but like to eat the sticks of sugar cane. We grow paw-paws, avocado pears, (I think the Americans call them papaya and alligator pears), naartjes or tangerines, granadilla, pineapples, and most vegetables, also paddy rice and mealies or maize. We have horses, pigs, cattle and breed dogs and cats, Siamese and white Persian. I may take over the agency for Juliette de Bairacli-Levy's Vet. herbal remedies, as we have found them very successful in treating our own animals and there are very few Vet's in this country. Not one in our district, and dogs die by the hundreds in this climate from billiary and distemper.

We have an estate of 12,000 acres, 100 miles from the nearest large town of D'Urban. The native Zulu and Indians, also native men and women from Pondoland, Nyasaland, Portuguese East Africa and Rhodesia work on our lands. White people do not do field work. It takes 10 natives to do work equal to what one European can do. They are a very slow, lazy and dirty people, but the Indians are good, quick workers and

far more intelligent in every way. They were brought out from India some 60 years ago to pick tea and sugar cane, as the native was found to be so hopeless.

Wishing you every success with your excellent magazine, which is always so gay looking and quite exciting with its truth revealing articles.

Mrs. B. R. Hindson
Clifton Tea & Sugar Estates
"Nonoti Peak"
P. O. Kearsney
North Coast of Natal
South Africa

Earthworm Castings Hasten Narcissus Blooms

I was able to bring Narcissus bulbs to bloom in the matter of 14 days while others alongside of them that had been planted a month were not in bloom. In one case they had been planted for over two months. My bulbs gave a far superior growth, double in height and much sturdier. I used compost made by my worms. So I am sticking to them and hope to co-ordinate the three systems. The Enzactivator that I will now make myself should add the last touch.

Capt. C. E. Misener,
R. R. 1, Wainfleet,
Ontario, Canada

Peaches Without Sprays

Due to ill health I was compelled to retire from business five years ago. I purchased three, 45-foot lots on the lake. The view was fine. The land—pure sand on which only wire grass would grow. We placed our home in the center lot and placed a garage on another. The balance we made into a park as it already had some trees. The other we reserved for gardening. We had sand and gravel. Slowly we went to work and purchased several truckloads of stone. These were carefully laid out and the landscaping started at the lake front. In front of each wall we dug sand out and from two to three feet in filled the trench with

KESTON *Organic Shredder*

Approved by Professional Engineers

Patent Pending

Shreds every kind of compostible materials for MULCHING and QUICK COMPOSTING. Serves also as a mixer. Ideal for both OLD and NEW methods.

Shredder based on improved cutting principle with 80 case-hardened steel knives arranged to shred finely regardless of whether green, dry, wet, or partly decayed. Stationary or portable. Fafnir type sealed bearings. Built and guaranteed by high class equipment manufacturing company. Can be operated with a power take-off.

Only **$125,** f.o.b. Factory in Pa.

ACCESSORIES

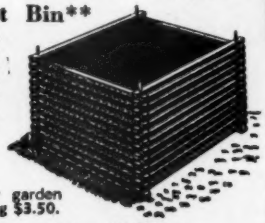
½ h.p. electric motor	$34.00
1½ h.p. gasoline engine	44.00
Clutch, for easy starting of gasoline engine	10.00
Portable features, as illustrated	17.50

One of Organiculture's Greatest Assets—*Order a Keston Now!*

Earthworms*
Specially bred composting earthworms per 1000. **$6.50**

Earthworm Culture-casting Cabinet**
An electric cabinet designed so that the castings are deposited in a separate moist chamber. 1000-worm size **$15.00**

Compost Bin**
LEHIGH TYPE—Rot - resistant New Jersey Cedar. Steel corner rods. 1-ton size, $10.00; 2-ton size $15.00.



Fulcrum*
To convert your garden fork to no digging **$3.50.**

Grist Mills for the Home*
A hand-operated grist mill, with adjustable burrs, for making your own whole-grain flour or cereal. Capacity, Coarse: 1 lb. per minute. Fine: ¼ lb. per minute. Grinds all grains, coffee, spices **$7**
Write for prices for larger and power models.

. . . . *make*
COMPOST
quickly . . .

Use one of following starters.

B-D Compost Starter*
Scientifically formulated in a Research Laboratory. 1-ton unit, $2; 3-ton unit $5.25

Enz-Bac Composter*
An all-purpose starter with all bacteria, fungi, and enzymes needed for rapid composting; serves also as a deodorant. 1-ton unit, $2; 5-ton unit, $8.

Fertosan Compost Accelerator*
A new starter containing selected bacteria and fungi for quick composting. Acts quickly if shredded. 1-ton unit, $1; 4-ton unit, $2.50.

Keston Herbal Activator*
For Quick Clean Composting. No Turning. 100% herbal-organic. Made in U.S.A. Enough to activate 5 tons, $1.00.

Terms: Cash with order. * Prepaid—add 10% West of Mississippi. ** F.O.B. Factory.

ORGANIC IMPLEMENTS AND PRODUCTS CO.
P. O. Box 107 HADDON HEIGHTS, N. J.

ENERGIZED *Hyper-Humus*
NATURE'S SOIL BUILDER

SURFACE-COMPOSTED and ENERGIZED
Available in Moisture-Sealed Bags

HYPER-HUMUS comes to you in kraft, polyethylene lined 25, 50, 80 and 100 pound bags. These sturdy, moisture-sealed, easy-to-handle bags preserve all the life-giving vitality of HYPER-HUMUS for long periods.

The Rich Vital Soil Organic

HYPER-HUMUS is also ENERGIZED for greater efficiency. It teems with beneficial soil bacteria. Depend on it for healthy plant growth and more production. Remember, this is real humus, not peat moss. See your dealer or write us

HYPER-HUMUS CO., BOX 19, Newton, N. J.

4 NEW MODELS to prepare Fluid AgroMulch

In the GARBAMAT outside the kitchen goes all garbage, bones, left-overs, paper waste and boxes, contents of ash trays, faded flowers and all such. A starter button sets the shredding disk in the bottom of the GARBAMAT into action. A timer stops the GARBAMAT automatically.

The GARBAMAT thus produces AGROmulch containing mineral and organic nutrients to add to your compost pile or to apply directly to shrubbery, trees and around flowers. The homogenized garbage becomes completely odorless and safe to use as it dries out readily on the ground.

GARDEN MODEL 18
25 Gallon Capacity
2 H.P. Gas Engine
or ¾ H.P. Electric

Each size AGROmulcher can do its share in improving soil, raising better and bigger crops through maintaining moisture, keeping down weeds and keeping off bugs with mulch easily prepared from your organic waste and easily applied. You save more than half the labor and reap better than double the crops.

GARDEN MODEL 24
50 Gallon Capacity
3 H.P. Gas Engine

CUSTOM MODEL
150 Gallon Capacity
7½ H.P. Gas Engine

The GARBAMAT and the AGROmulcher models are unconditionally guaranteed to be satisfactory. Write for further details and prices. Let us put you on our mailing list for articles on how to get the most out of AGROmulching.

KURT WANDEL INDUSTRIES R. D. 1 DOWNINGTOWN, PA.

GREEN GOLD for the GOOD EARTH

GLAUCONITE - POTASH MINERAL - GREEN EARTH

Use it Now
Use it Anytime

it's safe — economical

A safe source of Potash plus some 20 trace elements. GREEN EARTH is unexcelled as a remineralizer of soils. Holds elements already in the soil—makes them available to the plant. Can be spread with excellent results in any season. Apply it even to growing crops—**gives boost necessary for top yields.** Use NOW on pastures and lawns for better growth. Use on Potash-hungry fruit trees to **increase size of fruit, prevent scorch.** Equally effective on Vineyards. GREEN EARTH supplies just enough nutrients to meet requirements of the growing plant. Remainder stays to permanently enrich the soil. **Will not leach out—will not deteriorate —will not form unavailable compounds.** Easily applied—add directly to the soil or mix in compost. Labor held to minimum.

Order GREEN EARTH as you would your coal supply. Store without worry of deterioration. Odorless! Have it on hand when you need it. **Cheapest source of Potash,** attractively priced for large or small user. Remember—"greensanded" soil is being continually enriched while crop production is being increased. Value proved by 150 years of use.

$1.75 hundred pound bag,

NATIONAL SOIL CONSERVATION, Inc. Suite 706 80 West St. New York 6, N. Y.

compost about one foot deep. After four years of hard work we had very good results. Yes, your magazine was a great help.

It is amusing to hear people on boats remark, "This is the place I've been telling you about, etc. Simply out of this world!"

The purpose of this letter is about the garden. We planted peach trees, now four and five years old, mulched as directed. Out of these trees we canned last year, 92 quarts. No spray was used. It is a common question for people to ask what kind of spray we use.

Charles Salerno
301 Shady Lane
Lake Orion, Michigan

Mulched Garden Free From Diseases and Insects

Have had a compost pile for one year. Have every vegetable you can mention, even celery 1½ feet high, strawberries, grapes, black- and youngberries, figs, pear, peach, and apple trees. Have not used one penny's worth of commercial fertilizer on anything, except compost. Within this year I have not found one dozen insects in all my garden. I also have bird feeder, and between my compost and birds I have a beautiful garden. Also, my flowers and roses have nothing whatever on them. Everything just grows and grows. I never work my beds. I just pull the good 'ole compost up around their little necks and give them a drink of water when God does not give it to them and that is all.

Mrs. W. A. Nunez
4730 Winnetka Street
Houston, Texas

Even Poor Compost is Better Than Commercials

Last year I had a very poor grade of compost but my vegetables improved 100% even with the drought which we had in this section last

year. I have made up my mind that even with the poorest grade of compost it is still far out in front of commercial fertilizers. It stands to reason it is the only way of gardening because it is the natural way of feeding the soil.

Derurard S. Mills.
South Berwick, Maine

Fertilizer Burn

I had an experience with artificial fertilizer last year that was new to me and may interest you. I used some 8-8-4 fertilizer, made up locally, on my lawn. It was a hot day when I put it on and I was perspiring freely. The next day I started to itch on hands, arms, feet, legs and neck. In a couple more days I was in misery with my hands and wrists covered with bumps like mosquito bites that nearly drove me frantic with itching. Feet and legs were almost as bad. I went to a skin doctor, a specialist in Chicago, and he said I had "fertilizer burn", a common ailment among workers in fertilizer factories, but something I had never heard of. He showed me pictures in a medical textbook on skin diseases which were the same as the swellings and sores on my feet and hands. I had to stay home from work for a couple of days because my hands were so painful I couldn't hold a pencil or pick up the telephone. Maybe you should warn your readers about this. As for me—I have used compost from there on!

E. M. Goodman,
2714 Eastwood Avenue,
Evanston, Illinois.

Importance of Trace Elements

We have been organic gardeners for over 30 years in our greenhouses and therefore know that you know what you are talking about.

We have subscribed to your magazine for I think 5 years and we gain many helpful hints.

We have given your magazine to many people in many states, that is people who are really interested, for this is a precious gift and something to be read as the Good Book is with a real sense of thankfulness and understanding.

Seaweed is a new mulch to us and we are trying it on carnations, sweet peas, calla-lilies, ferns, asparagus plumosus and cilatium ferns.

Bone meal is a must with us after every crop.

We use no manure other than sheep manure both fresh and dried. Over the years by comparison we find it best.

Something should be passed on like this—We have thousands of praying mantis around our place. We are very careful never to hurt them and we save their cocoons very carefully as we see they are our best friends in keeping the pest down.

I am really writing you to enclose the pamphlet to show you others are awakening to the fact you must have trace elements in the soil.

J. M. McEwen
Westfield, N. J.

Chemicals and Diseases

Just recently, while attending the Bee-keepers Convention, I was fortunate enough to meet a Mr. Stewart from Brooks who is using your composting system constantly and he has a marvellous garden every year. We were discussing the diseases that haunt the bee-keepers and I was promptly ridiculed because I had dared mention that the diseases were the result of artificial fertilizers and chemical insect sprays. My beliefs are supported in theory by a series of figures given in "Biological Attack on Diseases" by Holders Research Laboratory, 315 Victoria Ave., Windsor, Ontario, Canada. Dr. Holder deals with human diseases but I feel that the same research could be applied to the bee.

John Marcy,
Edmonton, Alberta, Canada

Why You Should Insist on

RUHM'S
Finer Ground
PHOSPHATE ROCK

Ordinary Coarse Phosphate Rock — RUHM'S Finer Ground Rock

- Flowers, grass, vegetables, grains—**all** growing things respond quickly and vigorously to even one application of this safe, effective fertilizer.
- Non-acidulated, RUHM'S PHOSPHATE ROCK won't leach out, so you can apply it now or any time, direct to soil or to compost heaps. You'll get results first year—and for years to come.
- The **finer** your phosphate rock, the more thorough its distribution in your soil—the more particles come in contact with plant feeder rootlets—the easier they can absorb it.
- Ruhm's Phosphate Rock (85% through 300 mesh screen) is by far the finest phosphate made.

Ruhm's Gives the Best Results

For Price, Full Information write

AUSTIN FEED AND SEED CO., Chattanooga, Tenn.
BRYAN & SHEFFER, Portland, Ind.
ENGLEWOOD FARM-NURSERY, R-5, Muskegon, Mich.
A. GRAMS AND SONS, LaCrosse, Wisconsin
J. E. HARRIS, Box 28, Ames, Iowa.
SOILSERVICE, Townsend, Mass.
VAUGHAN'S SEED STORE, Chicago 6, Illinois

organic
supply
center

AT YOUR SERVICE
9 Catoonah St., Ridgefield, Conn.

6 for $2 colchicum wonder bulb!

... Place them *bare — anywhere!* Yes! And they'll bloom without soil or water on window sill, table top or piano. Then just sit back and enjoy the magic of nature.

MAGIC bulbs keep on blooming again and again for several weeks. Fine gifts for shut-ins, children or beginners. GUARANTEED TO FLOWER.

6 HOLLAND IMPORTS for only $2 ppd. SUPPLY LIMITED. Send for these bulbs today! Complete story in each carton.

Order enrolls you as Club Member, without obligation, in famous

BULB of the MONTH CLUB Dept. OGU Algonquin, Ill.

MULCH with MUL-Tex

to
1- Hold soil moisture
2- Smother weeds
3- Eliminate need for cultivation

Is the sun stealing vital moisture from your garden? MUL-TEX (non-absorptive buckwheat hull mulch) lets rain through and holds it beneath—keeps sun from drying out ground.

Ideal for flower beds, gardens, lawns, shrubs. Dark brown color gives rich background, especially for roses. 200 lbs. will cover 260 sq. ft. one inch deep. Convenient 50 lb bags.

PRICES: 200 lbs. $5.00—500 lbs. $10.50 —1000 lbs. $19.00—2000 lbs. $35.00 all f.o.b. Cohocton. Order from this ad, or send for free descriptive folder.

LARROWE MILLS, INC.
BOX 1 COHOCTON, N. Y.

"MOHR" IRIS

Elmohr—Colossal reddish purple	$1.00
Frieda Mohr—Massive lilac pink	.35
Grace Mohr—Soft gray-blue	.75
Ormohr—Huge silvery violet	.50
Mohrsea—Intense violet purple	.50

One each (Value $3.10) $2.00 postpaid

More "MOHRS"

Lady Mohr—Spectacular chartreuse	2.50
Ormosa—Bronze-violet blend	1.00
Sheriffa—Metallic violet-purple	1.00
Wm. Mohr—Violet. Ruffled, veined	.35

One each (Value $4.85) $3.50 postpaid

All 9 "Mohrs" for $5.00 postpaid

FREE Iris and Perennial catalog on request

LAMB NURSERIES
E. 101 Sharp Box 0-8 Spokane 11, Wash.

What's New AT HOME AND IN THE GARDEN

Home Simplex Soil Tester

The Home SIMPLEX Soil Tester has recently been developed for those who want finer flowers, healthier shrubs, greener lawns and more nutritious vegetables and fruits. The kit is designed to test for

nitrogen, phosphorus, potash, and acidity.

Since the practical design of The Home SIMPLEX Soil Tester is easy, no knowledge of chemistry is needed. The deficiencies discovered through this kit may easily be corrected by the organic gardener by reference to the table below:

DEFICIENCY	CORRECTIONS
Too Acid	ADD — Limestone as needed to sweeten.
Potash	ADD — Greenmarl sand or other potash bearing ground rock.
Phosphorus	ADD — Phosphate rock.
Nitrogen	ADD more organic matter (preferably with high nitrogen analysis) to increase the efficiency of nitrogen fixating bacteria.

The Home SIMPLEX Soil Tester will make a total of 80 tests, 20 each for nitrogen, phosphorus, potassium and acidity plus tissue tests for nitrogen, phosphorus and potassium.

The kit is complete with easy to follow instructions, directions and color charts, all packed in a practical metal box to retail at $6.50 at dealers everywhere or direct from manufacturer. Edward's Laboratory, P. O. Box 2742, Cleveland, Ohio.

Iri-Gator

A novel garden watering instrument has appeared on the market The IRI-GATOR is scientifically designed to put water where your plant needs it—at the roots. Not a sprinkler, the IRI-GATOR changes destructive hose pressure into a gentle, aerated flow which penetrates deep into the soil.

The IRI-GATOR is said to save water and time, prevent erosion due to hose pressure, and is quite economical. It is sold in three different

models ranging from $1.00 to $1.50 in price. Sold by the Thomas Mfg. Co., 3520 E. Monte Vista Drive, Tucson, Ariz.

Sto-A-Way

New household safety and convenience is offered in the STO-A-WAY Iron Rest, recently announced as a hanging iron holder designed to store hot irons immediately after use. This eliminates necessity for standing a hot iron on end while cooling where it is easily tipped over, and frequently results in damage to the iron and danger to children.

Special feature of the STO-A-WAY is the detachable, fireproof rest which is placed on the ironing

board to protect board and cover while ironing. It fits flat on ironing board cover so iron will slide on and off ironing board. Construction is of fireproof asbestos and heat-resistant metals.

Portion of the STO-A-WAY for

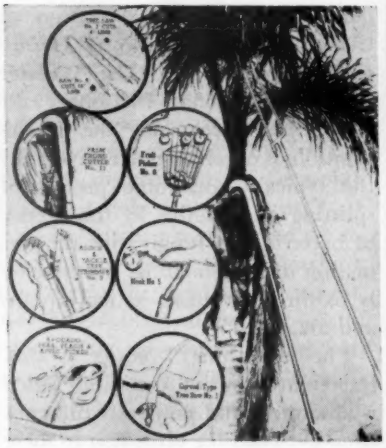
cord wrap-around in storage can be attached to a door or wall for convenient space-saving while iron is not in use. The iron rest is easily hooked on and detached for use while ironing.

According to the manufacturer, the STO-A-WAY will retail for $1, post paid, and can be ordered directly from the STO-A-WAY Company, Aurora, Ill.

Pruning

A penny post card will bring the free booklet entitled *How not to Prune and How to Prune Fruit and Shade Trees.*

This booklet describes and illustrates the three most important factors in pruning. It points out seven of the WORST mistakes made in pruning and shows how to avoid them. It contains pictures of new, revolutionary pruning tools and methods never before used. It shows how leading foresters, City, County, State and Federal park superintendents, tree surgeons, walnut and pecan growers, fruit growers, and home owners with only one or two trees, are finding that Debrell sectional lightweight aluminum poles, one-third the weight of ordinary poles, prevent accidents, cut labor costs, and increase production up to 100%. The book illustrates how to undercut a limb 40′ to 50′ in the air while standing safely on the ground with the new, revolutionary, triangular saw mounted on sectional, lightweight, aluminum pole. Three new improved fruit pickers are illus-



trated, ideally suited for picking fruit in the top of tall trees.

This booklet is highly recommended to both professional and amateur fruit and shade tree growers. Write to J. B. Sebrell Corp., 300 South Los Angeles St., Los Angeles 13, for your free copy.

Vermiculite

The mineral, vermiculite, used in gardening in place of horticultural sand, is responsible for exceptionally heavy root growth because of its ability to contain several times its own weight in water. Yet, since it is composed of countless tiny air cells, it assures ample air circulation about the plant roots.

Burn Your Rubbish

In your backyard

"Yard Boy"

Quickly, safely, reduces to fine ash some organic material — newspapers —certain types of garbage, etc. No mess, no sparks. Endorsed by users and Fire Prevention Bureaus from coast to coast. Lights at top, burns down. No extra fuel needed. Weather Resisting Porcelain Enamel Iron.

Price f.o.b. New York
No. 1—1½ bu., wt. 70 lbs., $32.00
No. 3—3 bu., wt. 100 lbs., $44.00
No. 6—6 bu., wt. 150 lbs., $75.00

Write for Illustrated Circular.

J. W. FISKE IRON WORKS: Estab. 1858
78 Park Place, Dept. O, New York 7, N. Y.

Orlyt GREENHOUSE $395

All Orlyt Prices Reduced Including Lean-tos and Greenhouses with Straight Sides

Now is the time to order an Orlyt to have flowers galore next winter.

Simple to put up anywhere, any time. Sections go together with bolts and screws. $395 buys the 10 by 11 ft. Orlyt pictured ready to go on your foundation. Others from $175. Automatic heat and ventilation at reasonable prices. Ask for Booklet No. 27.

LORD & BURNHAM
IRVINGTON N. Y. • DES PLAINES Ill.

KEMP SHREDDER "PAYS FOR ITSELF IN 2 WEEKS"

"The Kemp is the very thing I needed and, believe it or not, it has paid for itself already by shredding four tons of compost in very short time."

Writes O. Mason Kimmel, Level Green Organic Gardens, Trafford, Pennsylvania two weeks after buying his New KEMP Power Soil Shredder.

Kemp owners find the KEMP pays for itself quickly because it cuts hand mixing time and work up to 90% and healthier plants result.

Adjustable spring steel cutting teeth reject rocks; thoroughly mix all soils and manures to any consistency, fine or coarse.

Capacities range from 2 to 20 cu. yds. per hour. Gas or electric power—priced from $100. Write for catalog.

Kemp Manufacturing Co.

Dept. 4 1027 East 20th Street, Erie, Pennsylvania

THE PUTREFACTION –FERMENTATION FALLACY

By J. I. RODALE

WHEN I announced in the December, 1949, issue of this magazine a process of making compost by the Selby* enclosed method, which is for the most part anaerobic (that is, being accomplished without permitting air to reach the mass under decomposition), most of the persons who wrote in about their reactions were in favor of the new method, but a few were highly critical. They considered it almost irreligious to abolish the aerobic concept of making compost, and said that anaerobic conditions lead to putrefaction. This is a common fallacy which has led to much confusion. There has been a sloppy handling of the terms putrefaction and fermentation by writers describing the organic method, which caused an unfair evaluation of the Selby (enclosed) process of making compost when it was projected in this magazine. It will be the purpose of this article to attempt to clear this disorder of terminology.

The Webster's New International Dictionary states that *fermentation* is a "process of chemical change with effervescence, of the nature of or similar to that produced by the action of yeast." The Winston dictionary gives *fermentation* as "the decomposition produced in an organic substance by the action of living organisms, such as certain fungi or bacteria." The Webster New International Dictionary describes *putrefaction* as "the decomposition of organic matter, especially the typically anaerobic process of splitting of proteins, by the agency of bacteria and fungi, with the formation of foul-smelling, incompletely oxidized products, as mercaptans and alkaloids."

The first thing I notice is that fermentation is not something which is absolutely and positively different from putrefaction, according to these definitions. Fermentation is said to be merely decomposition or chemical change, while putrefaction is decay under certain conditions. We can therefore save ourselves a great deal of trouble if we consider *fermentation* as the broad, all-embracing term for decay of all kinds, however produced, one of which is *putrefaction*. In this conception putrefaction *is* fermentation, in fact Pasteur originally designated fermentation as an anaerobic process or life without oxygen.

The definition of putrefaction given above requires three conditions—one, it must be an anaerobic process; two, it is a process of splitting of proteins; and three, there is a formation of foul-smelling substances. With *two* and *three* I can agree but not with item *one*. I can describe a case of putrefaction that occurred under aerobic conditions. For years we made compost by the Sir Albert Howard process and watched carefully to see that there were no odors coming from the heap or pit, for we were told that if there were, something was wrong and there would be serious losses of nutrients. One fine day we obtained a heavy load of chicken cuttings from a wholesale poultry establishment and, no matter how we mixed it with hay and other green matter, it gave off a vile odor in the decomposition which could be smelled quite a distance away. We were careful to see that the heap was thoroughly aerated with holes as prescribed, but the more we aerated it the worse it smelled. When we smothered it with heavy coatings of earth it only cloaked the odor. We did not smell it but the odor was there. But with aerobic conditions there should be a greater speed of decay than under anaerobic conditions because of the oxidation, with a resultant giving off of more odoriferous substances.

One of our readers had the same experience with tankage, a high protein material. He wrote us: "Not having cows and horses to make barnyard manure for the compost heaps I bought 200 pounds of tankage and 200 pounds of sheep manure. The tankage made me a lot of enemies and I have had to cover both heaps completely with dirt to keep down the unpleasant odor."

There is nothing that he or I could do about odor because the tankage and the chicken cuttings were much higher in protein content than manure or plant matter. Aerobic or anaerobic handling was not the main question. The trouble was caused by the fact that entrails, feet and feathers of chickens and animal tankage are high in protein and when such a material breaks down there is usually an odor. In fact, in this case the more air that became available, the greater was the decomposition which took place and the greater was the odor. It

* The correct name is Selby, not Selvi. This was an error.

is usually the sulphur compounds coming from the protein that create the foul odor. A typical one is hydrogen sulfide which gives the characteristic odor of rotten eggs.

Regardless of what method is followed in the decomposition of organic matter in compost heaps, pits or silos, if the material is high in protein, a material which is high in sulphur, there will be an odor. Coming back to the chicken entrails, we solved the problem of odor by ploughing them under and not growing a crop for a year on that spot, to give them an opportunity to decay thoroughly. Incidentally, vast quantities of such material can be obtained free of charge and it will pay a farmer to plow such material under and rest a field for an entire year. He will more than make up for it financially. A good policy would be to sow a green manure crop there and to plow it under the following year.

I have shown that putrefaction can be either aerobic or anaerobic. I can also state that an anaerobic situation does not always produce an odor. Material low in protein content, which is not waterlogged, but is decaying under anaerobic conditions will not give off a foul odor. I have witnessed such experiments myself. But more later about this water factor.

In further reference to the defining of the terms *fermentation* and *putrefaction,* in the more scientific use of these words, there has developed a certain differentiation. *Fermentation* is considered as taking in the decomposition of carbohydrates while *putrefaction* covers proteins. This may work in specialized, technical processes where you may be dealing exclusively with carbohydates or proteins, but in the ordinary decomposition of plant. and animal matter, which contains both carbohydrates and proteins, we had better be guided by the meanings that I have given—namely, that the overall classification of all decay processes is fermentation, and that putrefaction can be either aerobic or anaerobic. In other words we go back to the idea that putrefaction merely means *smell.* How the smell is created is not part of the meaning of the word *putrefaction.* We can therefore say anaerobic putrefaction or aerobic putrefaction. We can also say anaerobic fermentation or aerobic fermentation.

Those who have criticized the Selby enclosed method of making compost should realize that only in a portion of the period of composting in the Sir Albert Howard process are the conditions aerobic. Let me quote from his *Agricultural Testament*: "After the preliminary fungus stage is completed and the vegetable wastes have broken down sufficiently to be dealt with by bacteria, the synthesis of humus proceeds under anaerobic conditions when no special measures for the aeration of the dense mass are either possible or necessary." About half the period is aerobic and the last half anaerobic, so that the idea that it is a grievous sin ever to have any materials decaying under anaerobic conditions does not hold true.

Now there is another kind of an odor which shows that something is wrong in the composting process. It is the odor of ammonia which indicates that nitrogen is being lost. It is interesting to note that the word *ammonia* is derived from the Egyptian god Ammon. It is said that there always was the typical ammonia smell from the stables near the temple of Jupiter Ammon in Egypt where camels were stabled, and when Berger named the compound ammonia about seventy years ago he was influenced by Ammon, the Egyptian god. Such an escape of nitrogen in the form of ammonia gas is usually a sign that anaerobic conditions have been created through an oversupply of water—a waterlogging of the mass. If the heap is too wet when it is taken apart for use on the land, you will get a sewage odor which is created by the formation of ammonia gas.

In following the new organic method, that is, applying the organic matter direct to the soil, there is no danger of anaerobic putrefaction taking place. In the Selby process two things are provided to prevent this condition. The pit is covered so that rain water cannot come in to waterlog the mass. Secondly, a drainage pit is provided so that much of the water and urine that is in the manure will drain off into it.

As was shown in the June issue of *Organic Gardening,* under anaerobic conditions there is a slower decomposition with a resultant conservation of nitrogen and other values. The aerobic method, with free access of air, causes a high heat oxidation, or a burning out of nutrients. We must get away from the idea that the mere word *anaerobic* is something horrible. True, certain anaerobic decompositions are undesirable, but not all. And the same thing applies to smells. Are all odors bad? If an offensive one arises because the material has a high protein content, then the only thing to worry about is your aesthetic sense and that of your neighbor.

The fact that the anaerobic storing of manure may be desirable is brought out in a book issued by the Food and Agriculture Organization of the United Nations entitled: *The Efficient use of Fertilizers.* In it there is a statement as follows: "In Norway, where cattle are stall-fed throughout the winter, the manure is dropped during the daily cleaning through a trap door into a basement extending the length of the cowshed. In this manner it is well protected until used in the spring." Further on it comments about this method as follows: "Under the efficient methods of storage described above, which are largely anaerobic (free of air) the rate of decomposition of organic matter is slow and the volatilization of ammonia reduced to a minimum. On the other hand, in dry, well-aerated manure piles there is much loss of organic matter and ammonia."

The above is so clear and, coming from so reliable a source, is so authoritative, that it should help to down the cry for the aerobic method of composting.

ORGANIC LANDSCAPE GARDENING

Effects with shade trees.

By PAUL PFUND

IF IT be within propriety to so state, in view of the widely claimed need for artificial stimulants, I get a genuine chuckle out of the fact that through the years our landscaping operations have been completely and consistently successful entirely without the use of chemical plant stimulants.

It is true we have experimented with same popularly conventional methods, but in every single case only to discover they were inferior and unworthy of our time and efforts. In one of the experiments we actually sustained a serious immediate cash loss. The trials were always carried out on a competitive commercial basis in actual plantings, which is really the acid test because only profitable operations can be the rule. With an organic background of over forty years in a wide range of landscaping operations, I hope to present some information to our landscape gardening-minded friends which can be easily applied by even the amateur.

Let us take for granted that a supply of well made compost is on hand or can be procured to be used in all planting operations. We can then enter into a consideration of some helpful suggestions. Springtime is, of course, planting time for a great variety of plant material, although I hope in future articles to stress the importance and even incomparable advantage of fall planting for much that is annually and unwisely being held over for spring operations.

Landscape gardening, like many another occupation or avocation, is an art. Study and practice make for advancement and the possibilities are boundless. Aside from a few basic principles I believe the individual's taste and temperament should be reflected. It is well to bear in mind that tall buildings should be surrounded with plant material suitable for creating an effect of shortening perpendicular lines while in the case of low or ranch-type homes the horizontal lines should be predominantly featured and extended with relatively low-crowned trees.

However, depending upon environment, especially if the building stands in the open, one or a group of three pyramidal-shaped trees may be planted to good advantage. In proximity they usually are most effective planted within a range of twenty or thirty feet from the house and preferably at the rear. Spacing between trees may be from ten to twenty feet in a triangular fashion. Where subsoils are porous and natural moisture is fairly uniform, the weeping cutleaf white-bark birch creates a charming effect. Planting birch on heavy clay sub-soils usually results in a short-lived growth. For such soils pin oaks are suitable, also Bolleana poplar, both of which grow into handsome pyramidal or semi-pyramidal form. Pyramidal lindens and hard maples are very attractive. Of the foregoing, oaks are usually the slowest growers but most durable, and their coloration in the fall is magnificent.

Bolleana poplars, especially while young, are subject to tree borers in some locations. The others less so as a rule, but this may be easily overcome by wrapping the trunks immediately when planted, with burlap cut in strips four to six inches in width and applied in spiral fashion starting at the ground and reaching up into the branches for a distance of about twelve inches. Burlap is incomparably better than paper because it admits the air quite freely. Besides keeping out borers most effectively, the covering serves to conserve moisture, which is of profound importance in the newly planted tree. Ordinarily the wrapping should remain in place for the first two years. After this period if borers should make an attack they are easily controlled by appplying a little carbon bi-sulphide with an eye dropper directed into the small opening created by the borer, plugging it immediately with putty or moist clay.

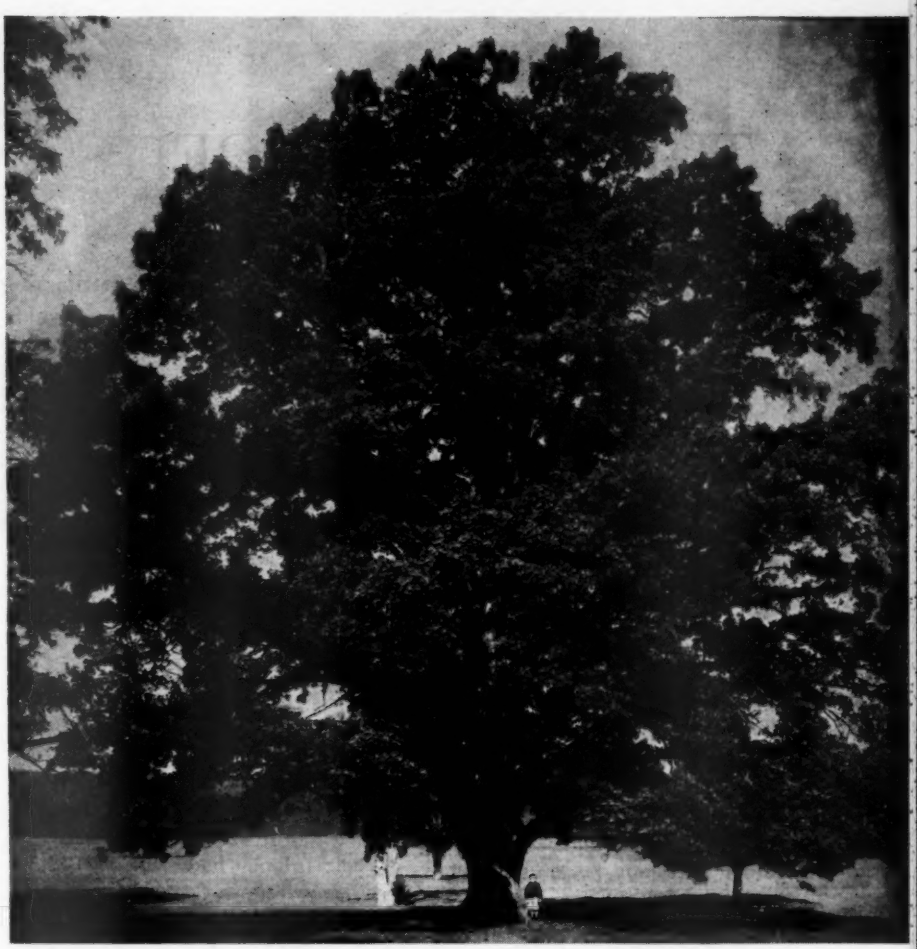
In making a selection, especially if a size above 2½ inches in trunk diameter (six inches above ground in the nursery) is selected, it is almost always of significant importance that the tree shall have been transplanted at least once in the nursery to insure suitable fibrous roots for further transplanting. Trees taken from native growth often fail to survive, and if they live, do not readily thrive.

There are, of course, exceptions to this but it is the part of wisdom to make purchases at the nearest dependable nursery. The price, even though it may seem high, is insignificant compared to the measure of assurance gained in purchasing nursery-grown trees. Considering the length of life and beauty, aside from their practical value, the planting of wisely chosen trees is the best investment anyone can make. They not only give us comfort but bless and comfort posterity as well.

There are, of course, many other very valuable trees, which are of a more spreading character, to choose from. It must be carefully borne in mind that the suggestions here offered are subject to modifications. Careful consideration must be given to the species and varieties to be chosen. This should be determined by latitude and longitude, as well as sub-soil, natural moisture, and drainage conditions. Within a radius of two hundred (more or less) miles south, west, and north of Chicago, the climatic conditions are often exceptionally rigorous mainly because of drying winds. This is a limiting factor in the range of species and varieties which thrive.

Practically all of the trees so far mentioned generally do very well in this area, as well as others consisting mainly of soft maple, Norway maple honeylocust, ash, hackberry, oaks, Schwedler's red maples, lindens, and lastly and very importantly the much loved American elms, the latter being in the majority for street planting. In many places our finest of public and semi-public plantings consist of the historically magnificent elms. Much apprehension is expressed at present concerning the loss of elms in large numbers in some areas due to the virus phloem necrosis.

It is with genuine gratification, however, that it may be said that a newly discovered variety of American elm, thus far undergoing severe tests, gives strong evidence of being immune to this destructive virus. The tree is a most unusual type. As contrasted with the usual spreading habit of most elms, this masterly creation, very probably through natural mutation, is of unusual upright, compact type. A fast grower, it promises to again rehabilitate blighted areas with magnificent elms, America's most widely known and historically important shade tree.



An open-grown White Oak is a beautiful landscape plant.

May I now leave you, and will you definitely plan to do your share of shade tree planting now? Especially so, if you missed it last fall. You'll gain time by not waiting until next fall. I hope to be back with more suggestions and information about landscaping soon.

Evergreens have landscaping values throughout the year.

THERE ARE PROFITS IN MISTAKES

A common mistake is crowding vegetables.

By LEONARD WICKENDEN

PART II

Spacing

IF PLANTS could speak, pitiful voices would arise from many gardens pleading: "Give us room! give us room!" Wherever I go, the commonest fault I find is overcrowding. I recall a visit I paid in the spring to an amateur gardener who proudly showed me his vegetables. He had two twenty-foot rows of loose-leaf lettuce seedlings, already four inches high, so packed together that only by close searching could any soil be found between them. Not only did they stand root to root lengthwise but they were pressing against one another, five or six deep, across the row. Out of curiosity, I counted the number of seedlings in a twelve inch length; there were sixty-two.

"Like lettuces?" I asked.

"Love them. Wife and I can never get enough."

"You should have enough," I answered thoughtfully, "if all those seedlings come to maturity. Just you and your wife, eh?"

"Uh huh. Just the two of us."

"There are close to twenty-five hundred lettuces there," I said, as mildly as I could. "Let's suppose they mature over a period of five weeks. That would be 500 lettuces a week or roughly 70 a day. That should hold you."

I think he had a sudden vision of the two of them sitting down to a table heaped with 70 lettuces. He was momentarily taken aback but recovered quickly with the protest:

"But of course I shall thin them out."

That's what they all tell me—they will thin them out. But for these 2,500 lettuces thinning out was long overdue. The roots of the lanky seedlings were so interwined that it was impossible to pull up one without disturbing ten. There was not one chance in a hundred that any of the 2,500 would grow to full size. Their infancy had been ruined by overcrowding.

That, of course, was an extreme case but I run into plenty that resemble it much more than they differ from it. Sowing sparsely and thinning early seem to be lessons that the average gardener finds it very difficult to learn.

Having made the first mistake of sowing too thickly, the only way my friend could have saved the situation was to pull out 80% of the seedlings while they were still tiny. It would have been a tedious and laborious job but had he done it he would have cut down the number of plants to about a dozen per foot length. He could have left these until they showed four true leaves, by which time the strongly-growing specimens would have been easy to distinguish from the weaklings, and could then have pulled out three of every four (choosing the weaklings to discard whenever possible) leaving his young lettuces four inches apart.

The final thinning would have come, perhaps, a couple of weeks later, taking out two of every three, either eating or transplanting these as he chose, and leaving the original row with the plants 12 inches apart. Assuming that his soil was good, he would then have produced approximately forty full-sized lettuces, or one a day over six weeks—surely enough to satisfy the most passionate devotee of lettuces.

This friend of mine lacked the gift of visualizing what his plants would look like eight weeks later if they were given room to grow. It is a common weakness. The man with a small garden is especially prone to try to increase his yield by growing three plants where there is sufficient room for only one. He defeats his own ends. Give a mid-season cabbage room to grow and good soil to grow in and it will be nothing unusual for it to reach 6 pounds or more in weight. Crowd three plants in the same space and it will be lucky if they weigh 1½ pounds apiece, they will have less heart in proportion and the quality will be inferior.

This principle holds good for almost all vegetables. Directions for growing snap-beans usually call for a final spacing of 3 to 5 inches. I thin mine to 9 or 10 inches and get more beans of finer quality and fewer beetles. In 1949, I grew broad-leaved endive and thinned the plants to 12 inches apart; it wasn't enough. They grew 15 inches in diameter and where they pressed against one

If a lettuce plant is going to head, it needs room to stretch out in.

These crowded plants will produce salad shoots, but not heads.

another the leaves rotted. It was sheer waste, for hard freezing arrived long before we had eaten all the crop and ten or a dozen plants rotted where they stood. The only vegetable I know of that seems to thrive when sown thickly is the pea.

It is really worth while to sit down with pencil and paper and figure out what quantity of vegetables your family consumes in the course of a year. In our family, except for salad greens from January to April, and sometimes potatoes in the early summer, we buy no outside vegetables. During the winter months we are well supplied from our freezer plus the root crops in the outside pit and onions, squashes and potatoes in the attic. Assuming that an average of three different vegetables appear on our table on 365 days, we need for our yearly supply sufficient vegetables for 1095 triple servings. (We are three in family.) Call it 1200 to allow for some hospitality. We grow 29 different vegetables, which average out to approximately 41 appearances for each vegetable. However, potatoes appear on our table probably 250 days in the year and, what with the daily consumption of tomatoes during the summer and the quantities of frozen juice and canned tomatoes used during the winter, a figure of 80 appearances would be conservative. Then lettuce, onions and peas are well above the average figure. All these high-consumption vegetables necessarily lower the needed quantities of the rest.

Thus figured, the size of the crops needed for a family of our size is surprisingly small. A dozen 5 pound cabbages give us enough for 24 meals with plenty left over for mixed salads. Two 25-foot rows of carrots (one early, the other late) at four carrots to the foot, give us 200 carrots—more than sufficient for 20 meals. And so it goes. It is unwise to figure things too closely, but it is equally foolish to grow such an excess that half the crop is wasted. That is using up nutrients from the soil to no good purpose. The right number of well-developed plants makes for satisfaction; an excess of puny ones means nothing but disappointment.

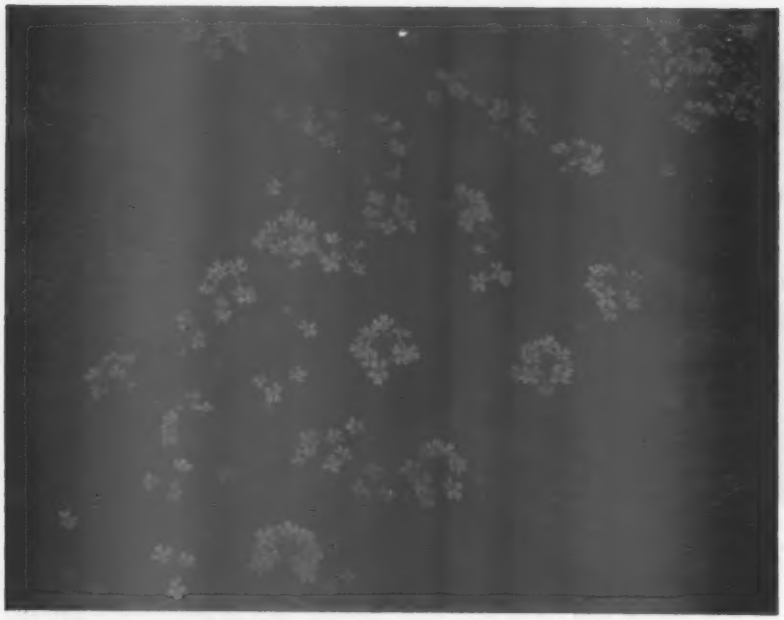
Panic

The experts who write in garden magazines and Sunday Supplements have made us gardeners a jittery lot. They love to make our flesh creep with descriptions of the host of insect pests that will surely destroy our crops if we are not eternally vigilant. As for diseases, they are so numerous and so virulent that the only hope of saving even a fraction of our plants is to lay in a stock of poisons and an armory of spray and powder guns and go to battle early and often.

"Don't wait for blight to appear," they warn us. "Prevention is better than cure. Once *phytophthora* has gained a foothold on your tomatoes, there is small chance of checking it. Spray early, start before the disease is expected and keep it up with weekly treatments throughout the season. Diseases galore will sweep upon your garden on the winds; mildew, rust, wilt, crown rot, damping-off, smut. The bogey-man will surely get you if you don't watch out!"

After several years of following organic methods, the bogey-man doesn't scare me much. During the 1949 season, I do not believe we lost a single plant (flower or vegetable) from disease, and the only time I sprayed was when I treated the poison ivy around our place with Weedone in order to kill it. The prolonged drought brought a certain amount of blossom-end rot to our tomatoes, but we had so much more fruit than we knew what to do with that it never occurred to us to get panicky. At one time, the older leaves on our eggplants showed signs of turning yellow. I sifted some compost through a ¼ inch mesh and dusted it over the plants two or

(*Continued on page 59*)



Plants for the Rock Garden.

MOSS VERBENA

Vivid color in the Rock Garden.

By G. L. WITTROCK

Assistant Curator of Education, New York Botanical Garden

THE name Verbena often brings to mind only one species, the common garden Verbena that has become one of the standards of our gardens today. This species, unfortunately, is most confusing to interpret since its nomenclature is clothed with a complexity of names, while the plants so called include many hybrids and forms. There are, however, many recognized species of the genus Verbena, botanists listing over 100 native from the temperate to the tropical zones with most of them native to the western hemisphere. There are about 17 of these species now cultivated in gardens today.

The derivation of the generic name, Verbena, is of historical interest, with many diverse opinions given on the meaning of the name. The most accepted explanation is that given by De Theis who states that it is an alteration of the Celtic name "ferfaen" given to the native *Verbena officinalis* of Europe, which was formerly considered a valuable medicine for eye diseases.

The plant we would like to recommend for the Rock Garden is the *Verbena pulchella,* known locally as "Moss Verbena," "Verveine jolie," "Verveine delicate," "Verveine elegante" and "Verveine gentille." The species name *pulchella* translated from the Latin means "pretty" or "beautiful." The species was originally found in southern South America and introduced to horticulture by Sweet who received the seed from Buenos Aires, Argentina. He described and named the plant in 1827, which becomes the date of its introduction to horticulture in England. A number of our modern horticulturists list it in their floras as a distinct species. However, some authorities state that this species is merely a form of Verbena *tenera;* others claim that the species is not a form of Verbena *tenera,* which is not in cultivation and lacks the beauty of Verbena *pulchella.*

The plant is a perennial; it has a somewhat woody base and is decumbent or sprawling in habit. The hairy to nearly smooth stems are sometimes 20 inches long and strike root readily where they come in contact with the soil. The leaves are small and finely dissected into linear, acute lobes giving a mossy appearance. The flowers are a solid blue or lilac, borne in terminal, dense, conspicuous heads that elongate when in fruit. The species is native to southern South America but now is becoming widely naturalized.

The propagation of the species and the variety is not considered too easy; thus it is a challenge to an enthusiastic gardener. They are usually grown by seed and treated like annuals although they are both perennials. The seeds should be sown in flats about March 1st in light sandy soil. The flat should be set out in a cool greenhouse or in a coldframe with a temperature of 60 degrees at night and 70 to 75 degrees during the day. When the seedlings are large enough to handle they should be transplanted into flats or small pots and kept in the same temperature until growth starts, which is normally in about 10 days. After danger of frost is past the plants may be set into their permanent beds in the garden. Cuttings may also be made in early September when young shoots develop in the established summer growth. These young shoots can be easily rooted under glass and then kept in protected coldframes or in cool greenhouses over winter.

The bright, vivid color of the flowers is ever present throughout the summer months and it is particularly valuable when most of the Rock Garden plants have either completed their bloom or are developing for fall flowers.

PRUNE WITH A PURPOSE

Is there a best time to prune trees?

By FRED O. HOPPE

EVERY tree expert has a theory on the question of what is the best time of the year to prune a fruit tree. Here are a few of them:

Whenever the knife is sharp (in other words whenever you feel like it). The season is usually midsummer or midwinter. Avoid in spring when the sap is running. At the close of the first growth period of the summer. June is the best time. Always prune in winter. Correct time is when it needs it.

There seems to be some confusion here. If the home owner wants to prune his own trees, he can do it at any time of the year and find tree experts who will agree with him and other tree experts who will say he is wrong. The only way to get out of this confusion is to find out what will be the reaction of the tree if pruned at various times of the year. A tree that has had branches cut from it will naturally react in some way. This reaction is somewhat like that of a balloon that is squeezed at one spot and bulges out at another.

If the cuts are made while the tree is dormant, the tree will try to replace these removed members when it again starts to grow at the next season. The buds that remain will push out in a more than ordinary vigorous growth. Here is a clue then. If you want your tree to push out in increased vigorous growth, prune while it is dormant.

As we follow the seasons around, spring is the next in line. No pruning should be done at this time and here is the reason. As the leaves haven't developed yet, new growth in the spring is actuated on stored food. This food moves out to the growing points, and any of these growing points that are cut off take a reserve of food with them. There is another problem at this time of the year that bothers many people. This is that cuts made on some trees will bleed. While this looks bad and one gets the impression that great harm is being done to the tree, actually no measurable damage is done.

The next season is summer and here pruning, done in an entirely different manner, can be undertaken with advantage to the tree. The end buds are nipped off of the new growth that is striding ahead rapidly. This stops the growth in that direction. As a result the branch starts to fill out in diameter, lateral twigs on the nipped branch develop more, and the fruit is benefited so that it has a higher quality. Therefore, if you want your tree to fill out more on the inside, or if you want a higher quality fruit, in summer nip off the end buds of the branches that are heading out too vigorously. If the tree is bearing fruit, nipping back of branches is about the only pruning that should be done. If you climb into a tree and start sawing, much of the half-developed fruit will be knocked down.

So now it can be seen that pruning can be done at almost any time of the year. It is, however, broken down into certain times of the year for certain objectives. Once you know the objective, you will know the time to carry out the operation.

Dormant pruning of trees.

DELPHINIUMS IN THE GARDEN

Delphiniums may be the crowning glory of the garden.

By WILLIAM H. EYSTER, Ph.D.

DELPHINIUM is the name of a genus of over 250 species of annual and perennial herbs of the buttercup family. This family is sometimes referred to as the crowfoot family, because the leaves of most species are three-lobed and thus have the general form of a crow's foot. The flowers are unusually showy and are generally borne on a long terminal cluster or spike which may be several feet in length. The annual species of this genus are commonly called *larkspur,* while the perennial species are referred to as delphiniums. It is with the perennials that this article is primarily concerned.

Delphiniums are unexcelled as cutflowers.

Origin of Delphiniums

Delphiniums are widely distributed over the northern hemisphere, occurring from California, the Swiss Alps, Kashmir, Sikkim, Tibet and on to China. Although there are many species, only a few have played a part in the development of the modern garden delphinium, which is a hybrid. The exact parentage of this hybrid is not known, but *Delphinium elatum* which has tall and stately stems bearing long spikes is believed to have played a leading role. The pioneer work in the development of the garden delphinium was done in England during the first quarter of this century. In more recent years, under the stimulus of the American Delphinium Society which was founded in 1928, many new delphiniums have been produced in the United States and more especially on the Pacific Coast. Delphinium growers have produced what many gardeners regard as the most beautiful of all herbaceous plants; and what is most important is that the new creations are even more vigorous and more beautiful than the older varieties.

Growing Delphiniums From Seed

Growing delphiniums from seed can be an extremely fascinating garden chore, and one which requires no special equipment. The seeds can be sown as soon as gathered in early fall. Early sown seeds generally germinate better than those which have been stored for a time, as the seeds do not long retain their ability to germinate. For best results, sow the seeds in a mixture of two parts of garden loam and one part of sand, avoiding all the usual materials used for enriching the soil. Sow the seeds thickly in rows, and cover them with fine soil, not deeper than twice the shortest dimension of the seeds. Then spread a damp cloth on the surface of the seed-bed or flat, and water thoroughly with a fine sprinkler, using only rain, spring, or well water. Good drainage is important. To insure this, coarse sphagnum moss should be placed in the bottom of the flats. Sphagnum moss may also be used, if finely screened, as a top dressing in the flat. When sphagnum is used, the seed-flats remain moist for a long time so that watering need not be done often. If for any reason seeds cannot be planted immediately after they are gathered, they should be sealed in an air-tight packet or other enclosure and kept at a temperature of about 50 degrees F.

To prevent slugs and snails from feeding on the delphinium seedlings, place the flat on inverted flower pots which are surrounded with ashes. The seedlings will lose most, if not all, their leaves and the small crown will remain dormant until the arrival of warm weather in Spring. When growth is resumed, the seed-

lings should be transplanted into other boxes with 3-inch spaces between adjacent plants. They will be ready to be planted out in the border or into the nursery beds for subsequent removal to the herbaceous border. Many seedlings transplanted in Spring will bloom during the late Summer and early Autumn, but it is not until the second year that they will attain their full stature and their real quality will become apparent.

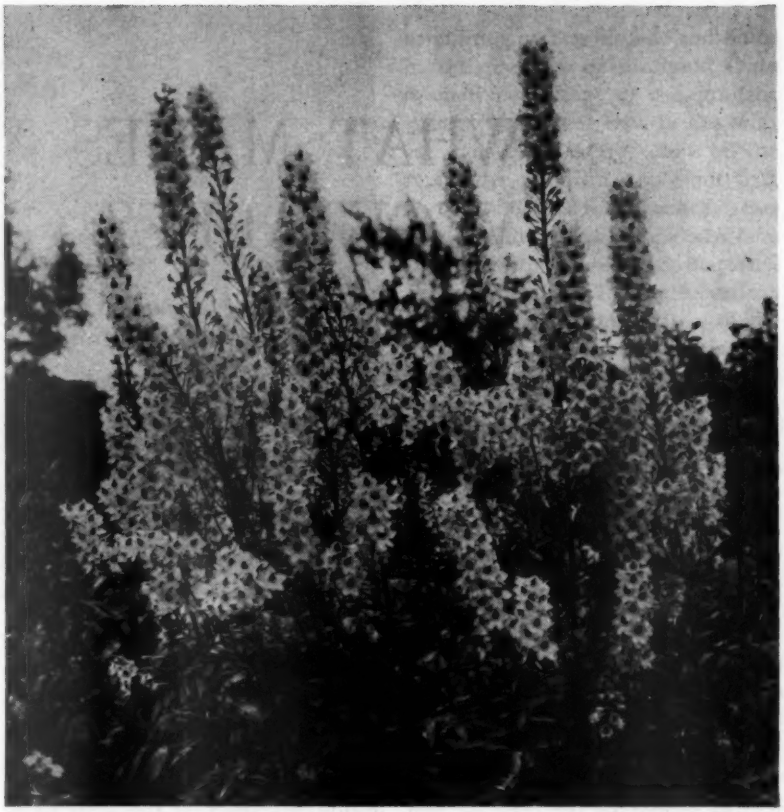
Growing from Cuttings

Since all garden delphiniums are highly hybrid, particular varieties can be kept true to type only by asexual propagation by cuttings. The best cuttings consist of young shoots severed from the crown of the plant in the Spring. These cuttings should be taken when about 3 inches long, taking care to get the heel of the cutting by making the incision close to the rootstock. As a rooting medium, use clean sand or vermiculite. Try to maintain an even temperature, but a very high temperature must be avoided. Rooting requires from four to eight weeks. Rooted cuttings should be transplanted in much the same way as seedlings.

Plants may also be propagated asexually by division. This is best done in spring when the growths are from three to four inches high. Lift the old plant from the ground, remove all old and decayed parts, and divide the plant into a number of parts, each having one or two strong crowns and an ample supply of healthy roots. In replanting, it is advisable to prepare the soil well with compost and pulverized phosphate and potash rocks.

Transplanting and Planting

Seedlings from spring-sown seeds should be transplanted after they get their first true leaves. Within from one to two weeks, the seedlings will be up. Remove the cloth or other material that was placed on the soil when the seeds were sown. Remove the seedling-flat to a cool, sunny place. Transplant the seedlings to deeper flats or in the cold frame. One purpose of transplanting is to encourage root development. In dry weather, a mulch of leafmold or peat moss around newly transplanted seedlings will insure a sufficient supply of moisture.



Delphiniums in clumps are effective in the flower garden.

The time to plant will be determined largely by suitable conditions, but plantings should be completed by the end of October so that the plants will be well established before winter. Plants can be set in soils rich in humus at almost any time. It is well to prepare the soil carefully, as delphiniums are voracious feeders. Delphiniums are definitely partial to well-fermented composts, and abhor chemical fertilizers. A liberal application of phosphate rock and potash rock is a good investment and will pay large dividends in healthy plants and superior flower spikes.

In setting the plants in the garden, the crown should be just above the level of the ground, which should be mounded so that water will not collect around the crown. The distances between plants will be determined somewhat by the purpose for which they are grown. In the herbaceous border, plants should be set from 18 to 24 inches apart. If planted for exhibition purposes, they should be set from 2 to 3 feet apart.

Delphiniums are most effective in the border when planted in groups of three or more plants, the number varying with the width of the border. In very narrow borders, they may have to be planted singly. For the first year after planting it will be well to limit the number of spikes to not more than three. When a foot or so high, the thinnest spikes should be cut out so that the three strongest ones remain to develop further. At this time the growing spikes should be supported by suitable stakes. Supporting the plants is an important operation, and it is best done by placing three stakes per plant and tying around them, thus leaving the

(*Continued on page 59*)

WHAT MAKES YOUR VEGETABLES GROW?

A consideration of environmental conditions.

By WILLIAM ACKERMAN

YOU have undoubtedly been eating vegetables from your garden for some time now and probably have not given too much thought as to exactly what made them grow the way they did. Were your vegetables tender and sweet with better flavor than those you purchase at the market, or were they somewhat flat and tasteless? High quality should be the constant aim whenever vegetables are grown. In some respects, particularly as relates to flavor, the matter of quality is more or less a question of individual taste. However, other factors of quality such as tenderness, succulence, sweetness and the like are generally recognized by all of us. Tough, bitter lettuce does not invite a second bite. Snap beans which are tough and stringy and no longer "snap" will not fool anyone who knows the taste of well grown, tender beans.

Of course, the particular taste of vegetables differs, depending on the variety grown, but the environmental conditions under which these varieties are grown play an important part in what the harvest product is going to taste like. High quality varieties of some vegetables do not always stand up well on the market. Unfortunately, many of the vegetables you purchase at the market are good shippers rather than high quality vegetables, but this is no excuse for poor quality vegetables from the garden. The gardener has the opportunity of having for his own consumption a much better product than does the person who must buy his supply from the market. In either case, there are two groups of factors which operate to affect the ultimate condition of the vegetables when prepared for the table.

The first is concerned with the conditions affecting the crop while it is growing. The second includes how the vegetables are kept during the interval between harvest and use. The shorter the time from garden to pot, the less chance there will be for changes to take place. All that is thus gained may, of course, be lost by poor cooking. To the gardener, the first group of factors, principally the growing conditions, is of importance. To the housewife it is the second group of factors that she must concentrate on, investigate, and improve. In this article, we shall consider the problems of the gardener.

In order to grow vegetables of highest quality, an understanding of the principles of plant growth is essential. Regardless of whether a plant is growing in a greenhouse, garden, cultivated field, in the sun or in the shade, it is continuously acted upon by a large group of environmental forces which influence the way it grows and what it will be like at harvest time. The environment of living plants is so complex as to defy any complete study of all the factors. However, there are certain physical forces of the environment which ordinarily exert a more or less *direct* effect upon the growth and development of plants that can be rather easily recognized. These factors are: temperature of the soil and air; sunlight; humidity; soil water; soil aeration; concentration of minerals in the soil solution; amount of organic matter present in the soil; and concentration of gases in the atmosphere.

The growth and composition of garden plants will be greatly influenced by the factors mentioned above. An analysis of plant tissue indicates two very important points, namely, the high percentage of water, especially in the leafy vegetables like celery or lettuce, and the relatively small amount of minerals. The cabbage, for example, contains about 91.5% water, 7.5% organic matter, and 1% mineral salts. If the plant is burned, the ash contains most of the minerals which the plant has drawn from the soil. The individual amounts and kinds of minerals taken in will greatly influence the flavor of the cabbage. Besides this, the plant has absorbed water through its roots, which in turn affects the turgidity and crispness of the leaves. The organic material represents combinations of the carbon dioxide obtained from the air in conjunction with water and other materials absorbed by the roots which are combined into the production of sugars

A good surface mulch favors good growing conditions.

through the process of photosynthesis. This process takes place in the leaves of the plant, and any practice which reduces the leaf area, such as defoliation through disease or pruning the top growth, will consequently reduce production. Therefore, all factors affecting plant growth center around their influence directly or indirectly on the photosynthetic process. Continual growth is dependent upon new supplies of organic compounds built up in the plant.

Organic Matter

The organic or vegetable matter that has decomposed in the soil plays an important part in crop production. The incorporation of organic matter in the soil maintains the life of a productive soil and good healthy plants result. Tasty vegetables are never produced by weak, deficient plants, so soils high in organic content are a good assurance of palatable crops. When the land is cultivated frequently, the content of organic matter may be depleted rapidly. This is due to the stimulation of bacterial activity through better aeration. The various oxidation processes are constantly reducing the supplies of organic material in the soil, but they are being renewed by the decomposition of the bodies of soil organisms, old root systems or any top growth and added material which may be plowed into the soil.

Since the oxidation processes work continually to reduce the soil organic content, the return of organic materials to the soil should be equal to or in excess of that lost. The processes of breakdown are most rapid during the summer, resulting in a reduced organic content in the soil in the fall.

The fall season is an excellent time to follow the new organic method of sheet composting in the garden. At this time, organic materials are readily available in the form of garden plant residues, leaves, and many other materials so prevalent around the countryside in the fall. If your crops this year did not come up to your fullest expectations, remember that this fall is the best time to prepare your garden for next spring.

Sunlight

Photosynthesis, or the manufacture of sugars by the plant, is dependent upon the catalytic properties of the green matter (chlorophyll) in the leaves and stems in combining carbon dioxide and water in the presence of sunlight. Only a small percentage of the sunlight striking the leaf is used in the process, but the heating effect of the remainder plays an important part in speeding up the chemical reactions in the plant which are concerned with growth and maturity. Light is necessary for the formation of the green coloring matter of the leaves, as are also sugar, magnesium and nitrogen. Iron is necessary, but does not enter into the composition of the chlorophyll molecule.

Light has still another effect on the type of growth. The number of hours of daylight may determine whether the crop will develop as the gardener desires, or whether it will "bolt to seed" and pass out of an edible and salable condition. This effect of the length of sunlight each day on the growth of plants is called *photoperiodism* and is of considerable importance to the vegetable gardener. In regard to this influence of light, plants in general fall into three groups:

Long-Day Species—Species in this group go to seed more or less readily in a range of long-day lengths. Many such species flower and fruit in continuous illumination. At short-day lengths, these plants produce only vegetative organs.

Short-Day Species—Species in this group go to seed when the days are short in duration. Under longer photoperiods, they develop only vegetatively.

Indeterminate Species—The species falling into this category exhibit no critical photoperiod effect, most of them developing both vegetatively and reproductively over a wide range of day-lengths.

The way your vegetables grow, depending on whether they are short-day or long-day plants and whether you hope to pick the fruit or use them for the vegetative growth, can be controlled to a considerable extent by the proper placement of each vegetable in the garden in regard to sunlight or shade. Long-day salad plants should be well

shaded while short-day plants of this type do better in full sunlight. Similarly, fruiting vegetables that are of the long-day species should have full sunlight, and those of the short-day species, plenty of shade.

Moisture

The greater part of the plant tissue in its fresh state is composed of water. If it is possible to say that any factor is the most essential one for growth, then water is that one. Not only is water used in the process of manufacturing the carbohydrate materials of the plant, but it might be said to form the backbone of the whole structure. An adequate water supply for good plant-growth is especially important during this time of season. Ample water retention by the soil particles and a minimum loss to the atmosphere are two factors which can be largely controlled by gardeners under most conditions. To provide good moisture-retention the soil should be high in organic content and should be loose and friable. Compact soils greatly speed up water-loss through capillary action. When soils are packed, the spaces between the soil particles become very small and water rises much more rapidly to the surface and is lost through evaporation than when the soil is loose and the pore spaces in the soil are larger. Organic matter has a very high affinity for water and hold large amounts of it available for plant use. Thus soils high in organic matter are far more moist than light, sandy soils.

Mulching the garden soil prevents water run-off during rains, so that all of the precious mid-summer rain is saved for the garden vegetables. If the mulch is rather heavy, weeds will not grow in between the rows and near the garden plants. Weeds take large quantities of water from the soils which would otherwise be available for the vegetables.

Vegetables differ in their reaction to shortage of moisture. When the supply is abundant a more rapid and succulent growth will result. In general, the so-called salad vegetables will be of higher quality, earlier maturity, and better size if they are constantly supplied throughout their growth with sufficient moisture. Toughness of leaf (lettuce), petiole (celery), or swollen root (beet), will be the result of retarded moisture.

Mineral Supply

Minerals are essential for the growth of vegetables. Some minerals are needed in relatively large quantities while only a trace of others is sufficient. The supply of these minerals in the soil is dependent upon: (a) The amount added in the form of ground rock products such as raw ground limestone, phosphate rock, potash rock or glauconite, granite, marl or other rock materials. (b) The liberation of those naturally present in the soil by the action of organic acids formed by the plant roots and during the decomposition of organic matter. (c) The action of nitrifying bacteria in making the nitrogen of the air available for absorption by the plant. A considerable growth of weeds among vegetables will provide too much competition because of the use of water and nutrients, especially nitrates, by the weeds.

The chemical fertilizer people think primarily in terms of nitrogen, phosphorus, potassium and calcium, but little consideration is given the many other elements which are needed for healthy plant-growth and the resulting flavorable food products. Excesses of these primary elements result in deficiencies in other elements.

A reduced moisture supply will often have an effect similar to that of a deficient nutrient supply, especially nitrogen. It is evident that any diminution of the nitrogen will result in a reduction in the quality of salad vegetables. It is not a case of the roots searching out for nutrients or water when these are short, but they can grow better because they receive more carbohydrates. Even in a leafy vegetable, an oversupply of nitrogen will result in a very tender, succulent growth which wilts quickly when cut. Heavily nitrated celery will not keep well in storage. Thus it is evident that there must be a balance between soil nutrient supply and the manufacture of sugar by the leaves.

Soil Reaction

The acidity or alkalinity of the soil has an important bearing on plant growth. Most vegetables make their best growth on soils that are slightly acid. Beets, celery, and asparagus respond to lime on very acid soils. Watermelons, sweet potatoes, radishes and peanuts may be injured by liming. Efforts may be made to adjust the reaction of the soil as a means of preventing the growth of some specific disease organism, like that causing the clubroot of cabbage or the potato scab organism, or as a means of rendering certain toxic substances ineffective. When this occurs, there is danger of bringing the reaction to a point where manganese or iron is rendered unavailable. A chlorotic condition results, and with chlorophyll deficient, growth is poor.

●

Undissolved Elements In the Soil

"Future fertilization practices may be altered due to recent findings of the Universtity of California scientists that undissolved elements as well as liquids in the soil play an important part in plant growth.

"The importance of the undissolved elements was discovered during investigation into soil fertility conducted by Dr. Hans Jenny, assisted by members of the division of soils in the College of Agriculture.

"The tests are aimed at improving fertilization practices, now hampered by lack of adequate information on the reactions occurring in the soils.

"At the present time application of fertilizer is still a hit or miss proposition, comparable to a pill given to a patient suffering from an unknown disease," Doctor Jenny said.

COMPOST FOR THE SMALL HOME GARDEN

Continuous type of homemade compost bin.

By OTTO CONDERMANN

COMPOSTING appealed to me from the day my good neighbor, Fred Charbonneau, first put a copy of *Organic Gardening* in my hands. Then I wondered if I could gather enough materials to make it worth while, and where, on our bit of land, I could put "The Heap"; would it be unsightly, malodorous, or gather flies?

I decided to try composting and believe I've had reasonable success. Perhaps others, like me, hesitate to make the initial effort. A few words of "amateur explanation" may help them to better gardening via the Organic Way.

Considering my limited amount of composting materials, small land area; etc., I decided to use Compost Boxes. These I made myself, their size being determined by the space I chose in which to locate them. This spot, behind my garage, was a logical selection. Boxes are out of sight, yet easily accessible in winter as well as summer to both my neighbor and me for disposal of kitchen wastes. Water, during dry spells, comes from a handy tap at the side of the garage. More water runs right off the garage roof during rain.

This run-off from the roof I control with a piece of eavestrough laid across tops of boxes (Fig. A). When rains come after a dry spell, I let run-off drip right into the boxes as needed. If they don't require much moisture, the eavestrough is pulled over to catch the roof drip and run it away.

The boxes I made with rough boards of available widths, nailed an inch apart to 2x2 corner posts. The bottom two boards in front were built independently, as a gate, and hooked on. This lets me—or neighbor Fred (Fig. B) take the finished compost from the bottom of the box while unfinished materials from the top drop into position for further composting (Fig. C).

Materials pressing directly against the boards will likewise not be thoroughly composted. They are tossed back in for more composting and attention by the many worms in the litter.

All our kitchen refuse (kept free of paper) goes into the boxes. Banana peels, citrus and melon rinds are cut into small chunks to aid decomposition.

A new box is started with rough greens, weeds, stalks, grass clippings and leaves to make a substantial base of several inches. Whenever it is available, of course, I mix the half-finished compost from the previous making with this starting material. I try to keep tree leaves on hand at all times, gathering them in bags from the forest floor as needed in spring and summer.

These leaves are dumped between the boxes (Fig. A) and kept moist. Thus they are not only accessible for mixing, but have already had some preliminary work-outs from the worms. It is astonishing how many worms abound in just this leaf ac-

Continuous compost bin adjacent to the garage.

Examining the composting materials.

Removing the finished compost with a fork.

cumulation, coming back and forth, I presume, from between the boards of the adjoining compost boxes.

To every two or three inches of green matter dumped into the box I add a sprinkling of Activo Compost Hastener plus another sprinkling of compost limestone. Over every four or five inches of accumulation I spread animal matter. This may be stable manure (horse or cow) or even chicken droppings or heads or tails of fish, as I am able to get them. If no other animal matter is available immediately, I have a bag of chicken litter, floor sweepings from a neighbor's henhouse, which I use as needed.

The layer of animal matter is topped with a generous sprinkling of garden soil which, if I read *Pay Dirt* correctly, helps put essential elements into the compost mix. This soil keeps away flies and reduces unpleasant odors when fresh animal matter is added in the heat of summer.

This layering is repeated until my box is full, whereupon it is covered generously with soil and left till it is ready to be used. I don't turn it, leaving that to the worms. I begin to take out compost from the bottom gate when it appears to me to be ready to use. The time, I've come to learn in the past several years, depends upon materials, weather conditions, etc.

It will be your compost for your garden. I would say, YOU decide when your compost is ready to use (Fig D).

Compost is taken from the bottom gateway until the mix falling from above shows an unfinished condition. Then I merely leave it a while longer, continuing to add new materials to the top of the heap which, of course, is now well down in the box.

Once a year, in early summer, I empty the entire box, regardless of condition, and pull it to one side. There's some fine compost to be gathered beneath and behind the box and then used in the garden, a bit of it being saved to help get the new box well started.

A Few Tips

With boxes set next to a clapboard building, it is advisable to put sheet metal between the box and clapboards to prevent the latter from rotting. Moist compost will fall through the back of the box.

The tops of my boxes are rectangles of 2x2s, fitted to rest easily inside top stringers. I tack chicken wire to this top rectangle to keep stray cats and other animals out. Certain table scraps, etc., do attract them. Across the chicken wire I also spread a layer of burlap for shade as my boxes are exposed to sunshine all morning.

Fresh table refuse likewise attracts rats at times. I place rat traps in far corners of the boxes, well out of normal reach of unwary fingers, catch the rats . . . and compost them, too.

Garbage is added to the boxes all winter long, with Activo, limestone and chicken litter tossed to it occasionally. It doesn't "work down" much in cold weather but will resume its decomposing as springtime warmth returns.

My first box looked a bit soggy in its middle so on next try I set in a "chimney" of rolled turkey wire. I failed to fasten it and the casual tossing of materials pushed it to one side as seen in (Fig. E), which shows a boxful about ready for its final covering of soil. Now, when starting a new boxful, I center my chimney and fasten it with stout twine.

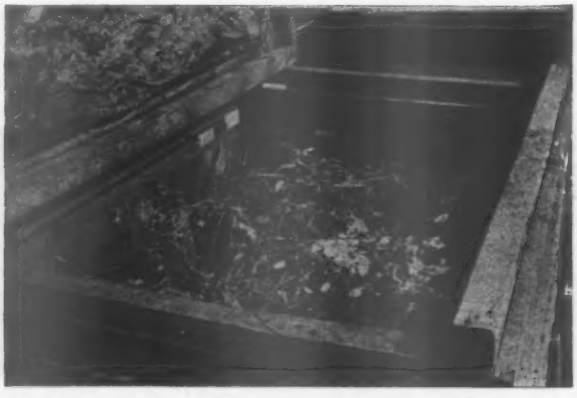
As a closing testimonial to compost, this happening is interesting. Here in Vermont our growing season is not too long. Even well started tomato plants are rarely set out before Decoration Day.

Two years ago I began a new box in mid-June. Along in July some suspiciously familiar looking vines crept forth from the side of the box and began growing rapidly. They were tomato vines, obviously the offspring of table discards.

By early September, as we were gathering the last of our tomatoes from garden plants set out by custom, the "compost box tomatoes" were beginning to turn red. I got just two before our inevitable early frost nipped everything. BUT—I did get tomatoes from vines grown from *seeds* that were started out of doors, an unheard of procedure.

Could it have been the compost?

A handful of finished compost.



Surface view of compost bin with wire ventilator.

A terrarium may serve as a window greenhouse.

A GREENHOUSE IN THE HOME

A window greenhouse available to all.

By CARL SPATZ

DID you ever wish for a greenhouse in which to root your own cuttings? You can have one if you have a window facing north and a temperature of 65 to 70 degrees.

In the fall of 1936 while preparing a terrarium for a flower show I needed a few more plants to fill in some bare spots. Some azalea, juniper and yew cuttings did the trick. Three months later the cuttings were not only still green but looked better than when first put in the terrarium. Upon closer examination it was found that the cuttings had rooted. Another terrarium was constructed and filled with the following cuttings: yew, arborvitae, juniper, andromeda and azalea, and several months later more than 95% of them were rooted. A number of azalea hinodegiri rooted in this manner some years ago, now are nearly three feet in diameter and are a sight to behold when in full bloom.

Cuttings can be rooted during all of the seasons. The slow rooting evergreens can be rooted during the winter and all spring, summer and fall cuttings from choice begonias, African violets, gloxinia, chrysanthemums, impatiens and numerous other plants can be rooted in a surprisingly short time. I have filled my terrarium with fibrous rooted begonia cuttings and in two weeks they had plenty of roots which permitted me to pot them and start another lot of cuttings.

My original terrarium was 30 inches long, 16 inches wide and 12 inches high. It was made of old pieces of plate glass and reinforced with a frame-work of angle brass. A glass cover is necessary to control a moist atmosphere. An aquarium with a glass cover and with soil instead of water is all that is needed to start one off to the realization that he too is developing a "green thumb."

To be successful with a terrarium you should give it all the light possible but no direct sunlight. In a very short time the sun will raise the temperature inside the terrarium so high that it will burn the plants. I use 2 to 3 inches of equal parts of peat and sand as a rooting medium, and keep it moist but never wet. It is much better to err on the dry side because if too wet the cuttings will mold and die. If the glass cover is adjusted so that there is about one-half inch opening at alternate corners the atmosphere inside of the terrarium will become drier. If the cover is closed tight it will become more moist.

FLORIDA'S STRICKEN WATERS

Shall we harvest Florida's gold or destroy it?
Water hyacinths have value in soil building.

By EDWIN H. ABRAMS

PART III

AN INTERESTING and timely article in the February issue of *Organic Gardening* is that entitled "Florida's Stricken Waters," from *Florida Wildlife*. A series of these articles on the water hyacinth should be of great value, especially as in most sections where these plants are making trouble, almost no one, even in those sections where the plants are making navigation a problem, is taking the trouble to do the obvious thing, namely, take the plants from the water where they are not wanted, and put them on the land that is crying for them. According to the authors of the *Wildlife* article, this beautiful plant is a terrible menace, and doubtless we shall shortly hear of drastic proposals for ridding the waterways of them.

It is to be hoped that in the efforts made to do this we shall not have to suffer a deluge of poisons beyond those that already afflict us. Our soils are sick and being made sick with dusts and sprays, bees are being killed, people are made sick, animals are suffering and dying. No one knows how much damage has been done by the use of that highly touted DDT and its still more deadly successors. It is so much, at any rate, that at last dire warnings are being published about the danger of their indiscriminate use. These, it is to be noted, did not prevent the Governor of Pennsylvania from "picking up a painful case of DDT poisoning from heavily-sprayed vegetation at his summer home at Indiantown Gap." It appears that these insidious concoctions are no respecters of persons. They hit the high and the low alike. We are suffering from air-borne poisons, earth saturated poisons, and if the waters are now to be deluged with additional poisons, Florida residents will indeed be in a bad way. In the article referred to, it was stated that hyacinths are costing the State more than $5,000,000 a year in hunting and fishing business alone. That is a lot of money. Imagine what a vast quantity of hyacinths could be harvested for use on the land, at the same time clearing up the waterways to that extent where most needed, with $5,000,000 honestly and judiciously spent.

The indictment against the hyacinth is severe, and in a way deserved, though it hardly seems necessary to refer to such beautiful and useful plants as "local infections, the city or community dogged by the virus, picked ineptly at its sores until at least part of the scabs had been torn away." Neither, certainly, is it worth while to exaggerate the menace. The writers quote Dr. Penfound, of Tulane University, as finding that "under optimum conditions water hyacinths would double their number on an average of once in 12.5 days. He estimated that in one good eight-month growing season ten plants could multiply into enough hyacinths to completely cover an acre of water." To one who has lived in close touch with water hyacinths for the past eighteen years this sounds fantastic. Not knowing what the "optimum" conditions were, one cannot dispute these figures. However, what Floridians are concerned with are the conditions as they exist in this State in the lakes and waterways. The writer has navigated Lake East Tohopekaliga, one of those draining into the Kissimmee River, under sail and otherwise, and found no obstruction by hyacinths except along the shores, and very little there except at points where canals enter or empty the lake. The surface of this lake has some 50 square miles. In a boat basin in St. Cloud the hyacinths flourish, but not at any astronomical rate of growth. Some years ago this small area, less than an acre in extent, became so full of hyacinths that boat owners were inconvenienced. Instead of calling the floating flower gardens bad names, the city officials were appealed to, and a crew of the city's men pulled the floating mass ashore with a cable. In all the years since, hundreds, or rather thousands

A colony of water hyacinths extracting plant nutrients from streams and lakes.

of the plants have been growing there and this fraction of an acre is still far from covered. If ten plants could in eight months multiply into enough to completely cover an acre of water, this basin should have been completely closed long ago. Instead it is mostly open water, with not enough hyacinths to prevent its use as a harbor for our small craft.

Sailing across the lake, about seven miles, one would seldom see as much as one floating plant unless after a recent storm that had blown them from the shore. At the inlets and outlets the plants sometimes are packed so tightly that one cannot row a boat through them, though an opening could easily be made if the adjoining property owners cared to spend a little labor in not only clearing a waterway but obtaining enough good fertilizer or food to pay for the work. The main reason why hyacinths multiply so rapidly seems to be that nobody pays any attention to them in the early stages, when a little work would prevent an undue increase. When the waterways are choked up there is a great cry, and still no adequate means are taken to remedy the trouble.

In view of all that has been said about the great damage done by the plants the question constantly recurs: Why, if it costs $5,000,000 a year damage in Florida alone, do not the State and Federal government spend enough to really accomplish appreciable gains? I quote: "Even with the army pouring $70,000 a year into the fight the problem in our navigable streams is still acute." Spending only $70,000 a year to offset a damage of millions a year looks more like a light sprinkling than a "pouring" of money into this project. Is it good business to lose year after year millions of dollars and make only feeble attempts to save it? In figuring the expense of clearing out the plants nothing has been said about their value as feed, mulch and fertilizer. Mention was made of hyacinths destroying food for ducks, but it so happens that ducks as well as other fowl are extremely fond of them. It is also a common sight to see cattle and horses that have access to lakes and streams wading out into the water to eat the hyacinths. The plants that could be harvested would be worth many thousands of dollars for the above mentioned purposes. Though I have used hundreds of bushels of the hyacinths within the past year or so, and found them most valuable, I have yet to see anyone else taking the trouble to gather them. Many a gardener will complain of his poor soil; and envy the compost-conditioned soil of his neighbor, but few, comparatively, are willing to do the necessary work to improve it, or have learned of the possibilities so easily within reach. The series of articles to come will be of great benefit if they arouse interest enough to start a worth-while campaign that will remove both the menace of the hyacinth to wildlife and fishing, and result in conserving the immense stores of fertility represented.

The question seems to be: Shall we harvest Florida's "gold" or destroy it?

Roses may be kept fresh for a long time in the vase.

MAKING FLOWERS AND PLANTS LAST LONGER

Techniques with bouquets.

By NASH CHANDLER

THE FLORISTS say: "It is very important for housewives to know the factors which help them to get full value out of their flowers and plants."

They give these recommendations: Poinsettias when used as a cut flower are sealed before delivery, so if it becomes necessary to cut the stems again the flowers can be resealed by placing the stems in boiling water for five or ten minutes or singeing them over a flame. Why do we do this? The Poinsettias are full of a white milky fluid, and would bleed to death unless the ends are quickly sealed.

We find roses are popular at all seasons. But they need careful handling. They should be removed from the box as soon as they enter your home. Cut at least an inch from the stem with a sharp knife, making sure that the cut is slant-wise to avoid crushing. Roses have a porous stem which takes up water to nourish the bloom. If the pores become clogged the flowers wither, no matter how nice the buds are.

Whatever you do, don't jam too many in a small-necked vase or suffocation will result. Be sure to use a vase that will allow your flowers to take water right up the stem. And keep in mind not to put them over a fireplace with a cozy fire burning. If you do, the only place for your roses will be in the ash can.

If, in spite of proper care, your roses droop without opening, cut two or three inches off the stem to clear the shaft, and place them in water deep enough to reach to the bottom of the bud. Then put in a cool place, not out of doors, until they revive. A good point to remember is that all flowers kept in a cool place will last longer.

A long-lasting flower which can stand a great deal of handling is the carnation. That is one reason these flowers have become the standby of sick rooms and hospital wards. All one needs to do to keep them looking their best is to cut an inch off the stem each day and place them in fresh water.

In caring for "Mums," you'll find that it's much like caring for roses—although "Mums" last longer. Care should always be taken to support the head of a large "Mum" because this flower is allergic to bumps. Bumping causes the numerous petals to shed. When removing "Mums" from a box, especially the larger

ones, be extra careful as they are very brittle where the head of the flower meets the stem and can be easily snapped.

Never lift a "Mum" by its head and make sure one hand is supporting the flower from underneath as you lift it from the box to gently place it in water. Instead of cutting the stem each day, the method is to break a little off the stems, about an inch or so, and then pound them a bit so they'll take up water.

In the feeding of many varieties what is one flower's meat is another's poison, you'll find in dealing with plants. Cyclamen plants come in a wide range of colors and are very popular around Christmas time. This plant thrives best in a cool place and should be watered every other day at the rim of the pot. Pouring water directly on the foliage or bloom spots them, making dark patches on the plant.

And then again, we have plants that love sunshine. A favorite is begonia. Allow your begonia to become thoroughly dry before watering; then water well. Keep the plant out of drafts and when begonia blossoms fall, pinch off the stem ends. New shoots will appear, which means more blossoms to take the place of those that fade.

The following families, such as Hydrangeas, Rose bushes and Azaleas, must be thoroughly watered each day with care taken so that they do not become waterlogged.

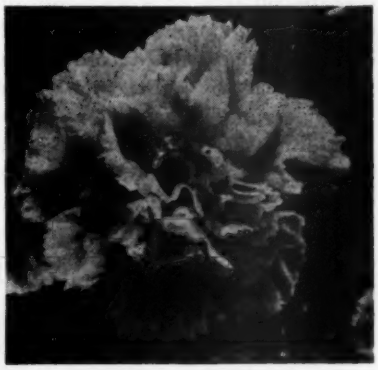
Here is an example: forgetting to water your Hydrangeas, then leaving them in a tub of water over night. The safer way to do is to immerse them in a bucket of water to reach the rim of the pot. Leave them in the pail of water for an hour and when you remove them they will be O.K.

So often customers complain that their ferns aren't as healthy as they would like them to be. Ferns are governed by the amount of water they receive and shouldn't be watered more than two or three times a week. The best way to water them is to place the plant in a pail of water for enough time to let the soil become moist, drawing up water from the bottom of the pot. Ferns should not be allowed to stand in water longer than this, as the soil becomes soggy and dries out so hard that roots are damaged and finally die.

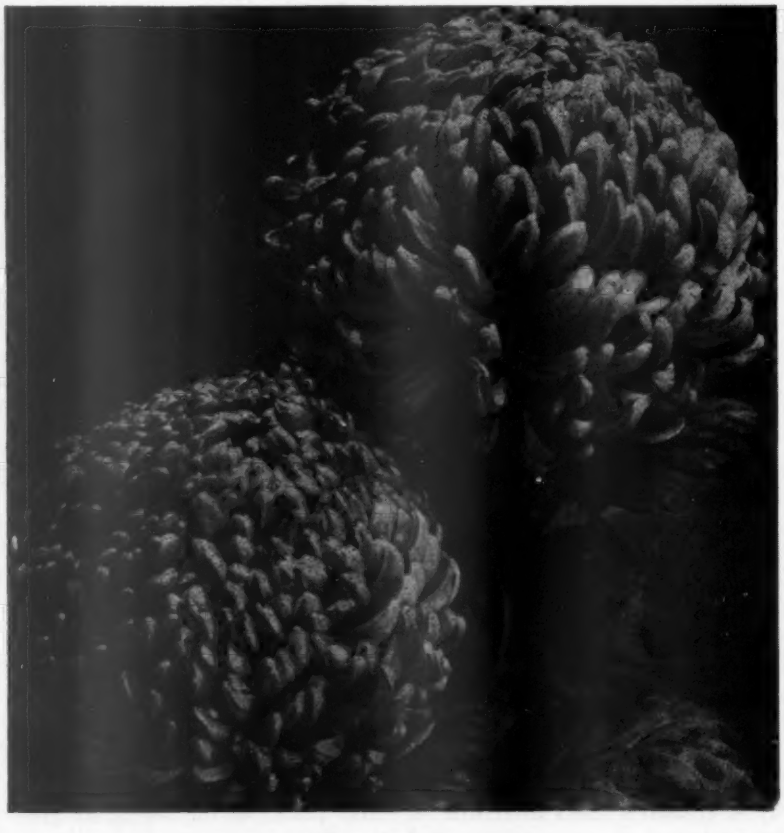
Keep your fern in a light airy place out of hot or cold drafts. You may put it in a jardiniere, but before you do, place pebbles or a saucer in the bottom of the jar to allow for drainage.

If these simple rules are followed you will not be having bad results with flowers or plants, and we, as florists, will receive a satisfaction when you find that you are getting the most out of both.

Crested Begonia



Sweet-scented carnation



Chrysanthemums

CHEMICAL FERTILIZER BILL PASSED

ONE of the happiest days at the offices of Organic Gardening occurred on June 22, when a copy of the June 20, *Congressional Record* came in, containing a record of the speeches made by congressmen which helped to unanimously pass House Resolution 323. This resolution calls for the appointment of a committee to investigate chemical fertilizers, poison sprays and harmful chemicals used in foods. The following is a record of part of the proceedings:

SELECT COMMITTEE TO INVESTIGATE THE USE OF CHEMICALS, COMPOUNDS, ETC., IN THE PRODUCTION OF FOOD PRODUCTS

Mr. DELANEY. Mr. Speaker, I call up House Resolution 323 and ask for its immediate consideration.

The clerk read the resolution, as follows:

Whereas the people of the United States are vitally interested in wholesome food; and since many individuals and firms have been placing adulterated dairy and meat products and other foods on the market and have by chemical processes together with pure adulteration reduced their nutritional value, specifically in various cheeses and meat products; and

Whereas an increasing proportion of the Nation's food supply is being industrially processed and the industrial techniques of processing food have a direct bearing on the quality of the national diet and the standards of public health; and

Whereas chemicals, compounds, and synthetics on an increasing scale are being introduced and used in the production, processing, preparation, and packaging of food products; and

Whereas under existing law there is no requirements that the chemicals, compounds, and synthetics be demonstrated to be nontoxic before being so used in the production, processing, preparation, and packaging of food products; and

Whereas chemicals, compounds, and synthetics are being used to reduce or displace in foods important nutritive ingredients; and

Whereas the trend represented by the use of these chemicals, compounds, and synthetics presents a serious problem not only to the health and welfare of people but also to the future stability and well-being of our entire agricultural economy; and

Whereas many pesticides and insecticides of known toxicity are being exposed for use in connection with the growing of fruit, vegetable and forage crops and for the eradication of insect pests, the uncontrolled use of which threatens contamination of the food supplies of the Nation with resulting ill effects upon the health of the people; and

Whereas the use of commercial fertilizer containing excessive quantities of inorganic chemicals is definitely involved in the matter of plant, animal, and human nutrition and health; Now, therefore, be it

Resolved, That there be, and hereby is, created a select committee to be composed of seven Members of the House of Representatives to be appointed by the Speaker, one of whom he shall designate as chairman. Any vacancy occurring in the membership of the committee shall be filled in the same manner in which the original appointment was made.

The committee is authorized and directed to conduct a full and complete investigation and study of—

(1) the nature, extent, and effect of the use of chemicals, compounds, and synthetics in the production, processing, preparation, and packaging of food products to determine the effect of the use of such chemicals, compounds, and synthetics (A) upon the health and welfare of the Nation and (B) upon the stability and well-being of our agricultural economy;

(2) the nature, extent, and effect of the use of pesticides and insecticides with respect to food and food products, particularly the effect of such use of pesticides and insecticides upon the health and welfare of the consumer by reason of toxic residues remaining on such food and food products as a result of such use; and

(3) the nature, effect, and extent of the use of chemicals, compounds, and synthetics in the manufacture of fertilizer, particularly the effect of such use of chemicals, compounds, and synthetics upon (A) the condition of the soil as a result of the use of such fertilizer, (B) the quantity and quality of the vegetation growing from such soil, (C) the health

of animals consuming such vegetation, and (D) the quantity and quality of food produced from such soil, and (E) the public health and welfare generally.

The committee shall report to the House (or to the Clerk of the House if the House is not in session) as soon as practicable during the present Congress the results of its investigation and study, together with such recommendations for legislation as it may deem advisable.

For the purpose of carrying out this resolution the committee, or any subcommittee thereof to hold hearings, is authorized to sit and act during the present Congress at such times and places within the United States, whether the House is in session, has recessed, or has adjourned, to hold such hearings, and to require, by subpena or otherwise, the attendance and testimony of such witnesses and the production of such books, records, correspondence, memoranda, papers, and documents, as it deems necessary, to employ upon a temporary basis such technical, clerical, and other assistants as it deems advisable, to utilize the services, information, facilities, and personnel of all agencies in the executive branch of the Government. Subpenas may be issued under the signature of the chairman of the committee or any member of the committee designated by him, and may be served by any person designated by such chairman or member.

Mr. DELANEY. Mr. Speaker, I yield 30 minutes to the gentleman from Ohio [Mr. BROWN] and reserve 30 minutes to myself.

I yield myself 5 minutes.

Mr. Speaker, this resolution deals with the use of chemicals in food. The resolution consists of three parts: The first has to do with substances of a chemical nature used in food: the second, with the use of insecticides and pesticides and their effect upon food; and the third, the use of chemicals in fertilizers and residual toxicity that may carry over to the food.

Both the gentleman from Wisconsin [Mr. KEEFE] and the gentleman from Illinois [Mr. SABATH] have sponsored this type of legislation over a period of time. I believe we will all agree that FRANK KEEFE is probably one of the outstanding crusaders on public health that we have in the country, and as a result of 10 years of investigation into public health and welfare he deemed it necessary to have an investigation of this type. The gentleman from Illinois [Mr. SABATH], who some 40 years ago first became interested in the health of the Nation, also deemed that we should have an investigation of this type.

I might point out one or two instances to show what effect the use of chemicals has on human beings. For example, in the bread hearings before the Food and Drug Administration we found that two companies alone last year sold 10,000,000 pounds of chemicals to be used in the manufacture of bread. These were substitutes for fluid milk, butter, or essential oils, and other organic material, and also eggs. We do not know what effect this may have. The Food and Drug Administration informs us that only where the toxicity is evident, where it will have an immediate effect upon the test animals, can they determine with any degree of accuracy just what effect it might have on human beings. We find, however, that continued use over a long period of time does have an effect or may have an effect. Since the beginning of the war more than 500 applications have been made to the Food and Drug Administration to use new chemicals in foods.

In the other body I believe Senator GILLETTE is conducting an investigation into the economic impact of the use of these substitutes the so-called chemicals, instead of the farm products that ordinarily would go into bread; that is, milk, eggs, butter, lard, and so forth. But that is purely on the economic basis; this investigation has to do with the health of the individual. We find evidence that certain chemicals used continuously do have a toxic effect on human beings, but just how much is a question.

Mr. JUDD. Mr. Speaker, will the gentleman yield?

Mr. DELANEY. I yield to the gentleman from Minnesota.

Mr. JUDD. I want to commend the gentleman and his committee for bringing out this resolution, because in the last few years there has been such a marked increase in the use of artificial materials in foodstuffs. We have not yet been able to determine their full and ultimate effects. In addition, there are possible bad results on human beings from the widespread use of DDT and other chemicals to kill certain insects or weeds in lands where cattle graze. It has been demonstrated that some do produce changes in the milk of those cattle. Over a period of time certain deleterious effects seem to be produced in the human beings who consume that milk. With the development of so many new drugs and remedial measures to fight disease and pests, we have entered a field that must be explored painstakingly in order to determine whether or not we may be seriously endangering the health of our people in ways that may not become apparent in some cases until months or years after the food is consumed. Therefore, there is no more important measure before us from the standpoint of protecting the health of our people than this one designed to get to the bottom of these problems by comprehensive, careful, scientific studies. I am sure there will not be any opposition to the adoption of this resolution.

Mr. DONDERO. Mr. Speaker, will the gentleman yield?

Mr. DELANEY. I yield to the gentleman from Michigan.

Mr. DONDERO. In my district a farmer cut the grass where a new outdoor theater was to be built. It had been sprayed with certain chemicals. He cut the grass, he took it home and fed it to the cattle and killed the entire herd. That is the effect of certain chemicals on animals.

Mr. DELANEY. That is exactly what this resolution seeks to investigate and remedy. It is an effort to give information to the public.

Mr. Speaker. The time of the gentleman from New York has expired.

Mr. DELANEY. Mr. Speaker, I yield myself five additional minutes.

Mr. Speaker, I might point out and read sections of a letter I have received from Dr. Paul B. Dunbar, Commissioner of Food and Drug Administration. This letter will clarify a great number of questions that I might be called upon later to answer. He states:

The principal problem encompassed in these resolutions is the use in food of chemicals, insufficiently tested to determine their toxicity, to effect some real or fancied improvement or to protect food during production or storage against attack by pests.

Under the present terms of the Federal Food Drug and Cosmetic Act of 1938, interstate traffic is proscribed in food which contains a poisonous or deleterious substance, whether added or not, which may render the article injurious to health. The law also forbids traffic in food containing an added poisonous or deleterious substance unless it is required in production or cannot be avoided by good manufacturing practice. Where it is required or cannot be avoided, the Administrator is authorized to prescribe tolerances limiting the amounts added so that the over-all quantity of toxic substances in our food supply will be held within the limits of safety to public health.

More than 500 chemicals have been proposed for use in food since the beginning of World War II. Most of these were untested for toxicity or their effects upon nutritional values, or had been insufficiently tested to determine with finality that they could be safely used. Where a chemical is not spectacularly toxic and does not kill test animals promptly, it may require complex and tedious tests of long duration to determine, first, whether or not it is in fact a poisonous or deleterious substance and, second, if so, just how toxic it is and whether it can be safely used within some specific limitation.

While most food manufacturers conscientiously refrain from using ingredients about the safety of which any doubt remains, there has been a tendency among some to use these chemicals before sufficient facts were available to establish their safety. Each of our annual reports since 1944 recites instances of such use.

It has been suggested that the law should contain a provision relating to the use of new substances in food parallel to the present requirements with respect to new drugs. These requirements were embodied in the act of 1938 after a new drug, which had been marketed without adequate testing to determine its safety, had resulted in more than 100 deaths. The law now requires that a drug must be adequately tested to determine its safety for its intended use before it is distributed in interstate commerce. It is not necessary for the Government to show, as it must in the case of foods, that the article when consumed as directed may endanger health. The promoter of a new drug must assume the burden of showing its safety before the law permits its distribution.

This resolution will put into effect the recommendations made in this letter by Dr. Dunbar.

(Mr. BROWN of Ohio asked and was given permission to revise and extend his remarks.)

Mr. BROWN of Ohio. Mr. Speaker, I yield myself such time as I may desire.

Mr. Speaker, as the gentleman from New York [Mr. DELANEY] has so ably explained, this resolution does create a special or select committee for the purpose of investigating various chemicals, synthetics, compounds, and other materials used in the manufacture of foodstuffs.

For a long time the distinguished gentleman from Wisconsin [Mr. KEEFE], our colleague who, because of illness, is unable to be with us today, has been giving careful study and attention to this entire problem. The gentleman from Wisconsin has spoken many times on the floor of the House to substantiate the need for an investigation such as this. He introduced a resolution in the House for the creation of a special committee for this specific purpose, as did the gentleman from Illinois [Mr. SABATH], whose name appears as the author of this particular resolution. It has been their joint effort which has resulted in this resolution being presented, first to the Committee on Rules, where it was approved by a unanimous vote, and then on the floor of the House today for the attention of this body.

This is an important matter which strikes across all party lines and affects every individual citizen, man, woman, and child, in this country. As the gentleman from Minnesota [Mr. JUDD], an eminent physician in his own right, has so ably pointed out, this legislation, and the difficulties which may be cured as the result of its adoption, may well affect the future lives of our children and our children's children yet unborn. So I am hoping this resolution will be adopted, and I know of no one who opposes it. On the other hand, there are many Members who are very much interested in this committee being formed and this investigation being made.

I want to take this time, however, to point out that this resolution, in establishing the committee and in setting forth the reasons for its creation and the need for it, carries the usual provision giving to the special committee created by the resolution the right and "authority to sit and to act, either as a committee or as a subcommittee, during the present Congress at such times and places within the United States, whether the House is in session, has recessed, or has adjourned, to hold such hearings, and to require, by subpena or otherwise, the attendance and testimony of such witnesses and the production of such books, records, correspondence, memoranda, papers, and documents, as it deems neces-

(*Continued on page 57*)

PANSIES IN ABUNDANCE

By ESTHER T. LATTING

Pansies are beautiful garden plants and may be used effectively in the vase.

"WHAT beautiful pansies!" visitors to my garden in July and August exclaim. "Where did you get them?" When I say that I grew them myself, they seem even more surprised, for few people realize how easy it is to grow pansies from seed. I started because I wanted more and more pansies, and buying them by the basket at roadside stands and grocery stores was eating too big a hole in my garden budget. My present program has been worked out over a number of years and, for my climate, gives excellent results.

To begin with, I buy seed from a specialist. One year I bought separate colors but found that individual pansies of a solid color lost a great deal of their charm. It is the variation in each upturned face that makes them so fascinating and appealing. Now I buy only mixed seed of giant bedding pansies.

I order in July to be sure to get fresh seed, and plant it in August. I use a board frame for easier control of moisture and shade. The frame consists of four 6-inch boards nailed together at the corners. It is placed on the ground and filled with about an inch of soil sifted through a quarter-inch mesh screen. The soil is a mixture of equal parts of garden soil, peat moss, and well rotted manure. This gives a light fluffy soil that holds plenty of moisture. In it the little roots make vigorous growth.

I use the edge of a lath to mark rows an inch apart. Pansy seed is large enough to make evenness of spacing a fairly simple matter. By creasing one side of the envelope into a V and tapping it gently with one finger, the seeds will roll out one at a time. They should be planted ¼ to ½ inch apart. I cover them with a thin layer of soil and press them down slightly with the flat side of the lath. After watering thoroughly, I cover the frame with a piece of burlap.

The bed is never allowed to dry out. Watering, when necessary, is done in the evening so the moisture will have plenty of time to soak into the soil before the heat of the next day. The burlap is left off at night to allow the dew and fresh air to reach the soil, but should be put back early in the morning to prevent the bed from drying out. In about a week the little plants appear. When they are well up, the burlap is replaced by a lath frame which is gradually left off for longer periods each day until the plants are accustomed to full sun.

It is important that they receive no check in their growth. As soon as the leaves of individual plants begin to touch each other, I transplant them to a nursery bed where peat moss, well rotted compost, and a sprinkling of bone meal have been worked into the soil. Here the plants are spaced three inches apart either way, and here they grow until moved to their permanent place early the following spring. There will be scattered bloom before extreme cold weather arrives. Lacking a good blanket of snow, evergreen boughs are used for protection over winter. They should not be put on until after the ground freezes, however, to prevent mice from making a winter home there.

To keep the pansies blooming through the summer, I plant them in rich soil and never allow any to go to seed. I often pick quantities of them with long stems and foliage. They are much prettier arranged with their own foliage, and the pruning keeps the plants compact and vigorous.

They do best in full sun. During prolonged dry spells they should have an occasional deep soaking from the hose. Sprinkling is worse than useless as it draws the roots to the surface where they are quickly damaged by heat and dry soil. It is also apt to start disease on the foliage.

Lots of trouble? Perhaps. But you should see my pansies!

SEMINAR ON PHOSPHATE

Natural and safe sources of phosphorus.

By WILLIAM ACKERMAN

PHOSPHATE rock is a natural rock product that is untreated by corrosive chemical acids. It is insoluble in water and for this reason supposedly unavailable to plants. The difference between superphosphate and rock phosphate is that the former has been treated with an equal amount of sulphuric acid to make it more soluble. This results in mono-calcium-phosphate, a slowly water soluble phosphate and calcium sulfate a highly soluble neutral salt. One of the bad things about sulphur, of many others, is that it causes sulphur reducing bacteria to multiply which work on it to reduce it. But these sulphur reducing bacteria have to feed, and part of their diet is a certain fungus whose function is to break down cellulose in the soil. It becomes a vicious cycle. Sulphur multiplies a bacteria which destroys certain badly needed fungi. The use of superphosphate, therefore causes an unbalance in the microbiological population of the soil.

Rock phosphate, on the other hand, is not highly water soluble and is lost in the soil only through cropping. The beneficial effects of rock phosphate far outlast those of superphosphate. Rock phosphate, when finely ground is available to the plant as it needs it. Plant roots give off carbon dioxide and certain organic acids, which in contact with the rock phosphate in the soil, make it available for plant use. Thus, *that* rock phosphate which is not made available by the action of plant roots remains unchanged in the soil until roots develop in its vicinity.

Composition of Phosphate Rock

Q. What does phosphate rock contain?

A. Phosphate rock varies somewhat in its composition dependent upon its source, however, the general constituents are as follows: * Calcium Phosphate or bone phosphate of lime 65%

(Equivalent P_2O_5—30%)

Phosphate rock contains other compounds and mineral elements, many of which are essential for plant growth:

Calcium Carbonate	Magnesium
Calcium Fluoride	Strontium
Iron Oxide	Barium
Iron Sulphide	Lead
Alumina	Zinc
Silica	Vanadium
Manganese Dioxide	Boron
Titanium Oxide	Nickle
Sodium	Silver
Copper	Iodine
Chromium	

* Ruhm's phosphate rock, a typical example.

Q. Where is rock phosphate found?

A. There are large deposits of raw phosphate in Florida, Tennessee and some of the Western states.

Q. Is the phosphate rock sold on the market today different from that a few decades ago?

A. Yes. Phosphate rock today has been much more finely ground. In the old days the machinery for grinding the raw phosphate rock into a powder was quite crude so that ground-up particles were coarse and did not break down too easily in the soil. However, today there is such elaborate machinery available that the rock can be ground finer than talcum powder, thus a sufficient part of it is immediately available to the plant because the particles are so tiny that the organic acids and carbon dioxide produced by the plant roots and bacteria in the soil can break them down quickly.

Q. Are the same elements, other than phosphates, present in both superphosphate and phosphate rock?

A. No, many of the minor elements found in phosphate rock are inactivated in the superphosphate process. Such elements as boron, zinc, nickle, iodine and others are available in rock phosphate but not in superphosphate.

Q. Has any experimental work been done that compares the results obtained with phosphate rock and superphosphate?

A. An experiment conducted by Dr. Neil W. Stuart, U. S. Government plant physiologist at Beltsville,

Md. disclosed some interesting results. The *Science News Letter,* Nov. 30, 1946, summarized these results as follows: "Another money-saving discovery in the use of ground-up crude phosphate rock . . . The plants get as much phosphorus as they need, without the necessity of adding costly phosphates to the nutrient solution."

The University of Oklahoma conducted experiments comparing the effects of phosphate rock and superphosphate, with and without lime on the growth of crimson clover.

200 lbs. phosphate rock with 400 lbs. lime	4,175 lbs. Hay
200 lbs. superphosphate with 600 lbs. lime	3,620 lbs. Hay
200 lbs. phosphate rock	3,920 lbs. Hay
200 lbs. superphosphate	3,170 lbs. Hay

The results of experimentation by the Missouri Agricultural Experiment Station as indicated below, show that untreated natural phosphate was better in every instance (but one) than superphosphate.

Manure, Rock Phosphate				
corn	oats	wheat	clover	timothy
bu.	bu.	bu.	lbs.	lbs.
41.0	38.0	27.5	4,138	5,425
Manure, Superphosphate				
corn	oats	wheat	clover	timothy
bu.	bu.	bu.	lbs.	lbs.
38.4	32.4	28.3	3,584	5,066

In Texas, in experiments from 1914 to 1936, by the Texas Agricultural Experiment Station, superphosphate and rock phosphate alone produced an average yield of 20.0 and 19.2 bushels of corn per acre, respectively. Where manure was used with these materials, superphosphate produced an average yield of 204 pounds of lint cotton per acre and rock phosphate 220 pounds. Aside from other reasons, the extra price paid for superphosphate would hardly seem warranted by the results, as compared with rock phosphate.

Phosphate Rock vs. Superphosphate

In the December, 1948 issue of the *Southern Farmer,* published in Montgomery, Alabama, with a circulation of one million readers a battle cry was sounded against superphosphate. Let me quote parts of their editorial:

"You can save from five to ten dollars a ton on phosphate by purchasing phosphate which has not been 'burned' by sulphuric acid.

"Natural phosphate will not leach from the soil. Rains will not wash it out. It remains in the soil until your plants use it. It is not water soluble.

"You can apply natural phosphate at any time, and benefit from it . . . You cannot apply it too heavily, and 'burn' your crops. You can either broadcast or drill it in the row.

"Natural phosphate does not harden or clog your machinery. It is safe around animals.

"Modern technology has discovered the way to grind it finer than flour, or talcum powder. You can now buy it ground that eighty-five per cent of it will pass through a screen so fine that it has 90,000 openings to the square inch.

"When phosphate is so fine, more surface area is exposed to the acid exchange process by which phosphoric acid is absorbed by plant feeder rootlets. This absorption is by osmosis, not by the phosphorus running up the plant in a stream of sap.

"Soil and chemical experts now agree that mixing sulphuric acid with phosphate rock is only a process of breaking down the phosphate rock. Why pay for expensive sulphuric acid when you can get the same results from machinery?

"*Southern Farmer* is prepared to show where untreated phosphate under legumes deposited more nitrate in the soil than superphosphate and even high-priced commercial mixed fertilizer." (University of Illinois' famous Mumford-7 plots.)

Rock Phosphate Becomes Soluble in the Soil

Q. Does rock phosphate have fertilizer value? All the fertilizer men and horticulturists say that it is no good. They maintain that the phosphate rock will not leach out in sufficient quantities to make it worthwhile to use.

A. As a rule the effectiveness of any rock phosphate is dependent upon its degree of fineness, the quantity applied to the soil, and the reaction of the soil. Its effectiveness increases with the acidity of the soil. Most inert but finely ground substances when applied to the soil become sufficiently soluble as a result of the action of carbonic acid and other soil acids. The solubility is sufficient to meet the needs of growing plants. The chief objection to superphosphates is that they contain sulphur and are too soluble.

Q. How many pounds of phosphate rock would I need for 9,000 square feet of space?

A. The Illinois Experiment Station recommends 2,000 pounds of phosphate rock per acre every three or four years until the phosphoric acid in the soil would amount to 5,000 pounds per acre. If you were to follow this recipe, on a small scale you would have to apply between 50 and 60 pounds per 1,000 sq. ft. every three or four years. You cannot add too much phosphate rock for practical conditions.

Phosphorus for the Compost Heap

Q. What is the best source of phosphorus for the compost heap to be used in fertilizng soil that is deficient in phosphorus?

A. Phosphorus may be added to the compost heap and to the soil in the form of raw pulverized phosphate rock or as bone meal. The soil acids will make these relatively inert forms of phosphorus soluble in sufficient amounts to meet the needs of the plants.

Q. I am preparing a compost

heap and I am interested to know how to use phosphate rock in the compost heap. Can you advise me?

A. Mix the ground phosphate rock with an equal amount of ground limestone and apply them together as a sprinkling over each layer of the compost heap. Or sprinkle the lime and phosphate rock separately in alternate layers of the heap.

Q. In my location I find phosphate rock costs just about the same as superphosphate. I thought it was supposed to be cheaper.

A. In comparing the cost of phosphate rock with superphosphate, you seem to forget that superphosphate must be applied each time you plant a crop, while the natural phosphate rock needs to be applied only once every three or four years. The cost of phosphate rock where it is mined is about $14.00 a ton. The actual sale price in different parts of the country varies considerably due to freight charges. The individual who uses large amounts of phosphate rock can make considerable savings by buying in carload lots.

Q. If phosphate rock is a valuable plant food how would it be as a mineral food for livestock?

A. Phosphate rock is regarded unsafe as a mineral food for animals when it is too high in fluorine. This same objection does not apply to phosphate rock in its raw stages as a soil builder.

Colloidal Phosphate

The colloidal phosphate is an excellent source of phosphoric acid. Colloidal phosphate is insoluble but becomes soluble in the soil in sufficient amounts to meet the needs of growing plants. The main source of this product is Florida, where it is found in natural sedimentary deposits of soft phosphate with colloidal clay. Colloidal phosphate is most widely sold under the commercial brand names of Se-Bo-Phos and Sea-Coll.

Se-Bo-Phos is a natural mineral phosphate carrier, comprised mainly of extremely small mineral particles. The fineness of the particles which comprise it are the result of natural processes, the larger or sand particles having been removed by sedimentation during its deposition in large settling basins. According to tests conducted by Dr. M. M. McCool of the Boyce Thompson Institute for Plant Research, Inc., more than eighty per cent of the particles are far too small to be seen with the naked eye. They are known technically as mineral colloids. The granules or clusters of particles of colloids possess the desirable property of breaking up or scattering when wetted by the soil moisture and thus are more readily attacked by plant rootlets which feed upon them. The fertility of a soil lies mainly in its colloids. It is an accepted fact discovered by soil scientists that the removal of colloids from a fertile soil would leave it unproductive, its tilth would be destroyed and its water retaining capacity reduced; its power to reduce leaching of valuable elements which are present in or added to it would be largely destroyed; its bacteria would be removed; and that portion which supplies most of the elements which crops remove from the soil, would be gone.

Chemical and Spectrographic Analysis of Se-Bo-Phos

	PERCENT
Phosphoric Content (P_2O_5)	21.950
Calcium (CaO)	31.720
Aluminum (Al_2O_3)	7.710
Iron (Fe_2O_3)	4.460
Magnesium (MgO)	1.340
Potassium (K_2O)	0.780
Sodium (Na_2O)	0.760
Sulphur (SO_3)	0.850
Carbon Dioxide (CO_2)	9.870
Manganese (MnO)	0.500
Nitrogen (N)	0.100
Barium (BaO)	0.400
Iodine (I)	0.014
Chlorine (Cl)	0.013
Titanium (TiO_2)	0.544
Chromium (Cr_2O_3)	0.096
Strontium (SrO)	0.628
Boron (B_2O_3)	0.435
Arsenic (As_2O_3)	0.001
Copper (CuO)	0.048
Cobalt (CoO)	0.004
Silver (Ag)	0.003
Lead (PbO)	0.032
Nickel (NiO)	0.043
Calcium Fluoride (CaF_2)	1.640
Zinc (AnO)	0.006
Carbon (C) Organic	0.596
Silica Gel, Complex silicates and undetermined	8.977
Total Water	6.480

Q. How much Se-Bo-Phos should I use on my farm?

A. Se-Bo-Phos should be used as follows:

Pastures—broadcast 500 pounds to one ton per acre.

Field Crops—300 pounds to 1000 pounds per acre.

Orchards—In setting trees use ten pounds thoroughly mixed with soil. For established trees apply at rate of twenty pounds to tree, evenly broadcast, as far out as the branches extend.

Lawns—Apply at rate of 100 pounds to 1,000 square feet, raking it into first inch of top soil.

Flower gardens—Apply liberally around plants and carefully mix with first inch of top soil.

Sea-Coll is another colloidal phosphate product. Although sold more as a livestock feed because of its low fluorine content, it is a valuable soil fertilizer. In other respects Sea-Coll is quite similar to Se-Bo-Phos.

Defluorinated Phosphate Rock

At the Tennessee Valley Authority (TVA), they have perfected a process of producing a phosphate fertilizer without the use of sulphuric acid. It is done by melting the raw phosphate rock in a shaft furnace at a temperature of 1300 degrees centigrade. It is called defluorinated phosphate rock. We do not suggest a rush for this new phosphate material. While it is better than superphosphate, it still costs more money than the plain, untreated, raw phosphate rock. If you want information

about it write to TVA, Wilson Dam, Alabama.

Basic Slag

Q. What is basic slag?

A. Basic slag is a by-product in the manufacture of steel. During the melting operations of iron ore the slag floats at the top and is removed. The slag is allowed to cool and then finely ground for agricultural purposes. The value of the slag as a fertilizer depends on the type of process employed in the steel manufacture. Imported slag contains sixteen to twenty per cent phosphoric acid. American slag from the Birmingham, Alabama iron deposits contains eight to eleven per cent phosphoric acid. Slag from other domestic sources contains little or no phosphorus, but is used to some extent as a liming material.

Q. What does Basic Slag contain?

A. The principle domestic source of basic slag, used for agricultural purposes, is the slag of the Birmingham, Alabama iron deposits. The analysis of this material is as follows:

	PERCENT
Minimum Total Phosphoric Acid	8.00
Calcium Oxide (Lime)	40.00
Magnesium Oxide	5.50
Manganese Oxide	3.00
Iron Oxide	18.50
Equivalent Manganese Sulphate	6.39
Fineness through 100 mesh screen	over 80

Some fastidious organiculturists may not like the sulphur in basic slag. However, the sulphur content is not too dangerously high if the material is not used in excess and if enough organic matter is used.

Q. Is the phosphate in basic slag available for plant growth?

A. The phosphoric acid content of basic slag is in a form that is claimed to be more rapidly available to plants than that of rock phosphate.

Q. In terms of superphosphate, what is the value of basic slag?

A. In a ton of basic slag there is about as much calcium as in a ton of dolomitic limestone and about as much phosphorus as in 1000 pounds of twenty per cent superphosphate, besides other necessary elements.

Q. Is there anything harmful about basic slag?

A. Some basic slag contains small amounts of sulphur. As long as the sulphur content is low, no harm will come from its use.

Q. I have heard that basic slag is exceptionally valuable on heavy soils. Is this true?

A. In heavy soils, especially pasture land where poor aeration limits the formation of humus, dressings of basic slag greatly improve the condition. After basic slag has been applied the formation of humus again takes place due to the greater availability of oxygen in the soil. The effect of slag on heavy soils is in the first instance a physical one which improves the aeration, reduces the acidity, and so helps the manufacture of humus in the soil.

Other Phosphate Fertilizers

In addition to phosphate rock and basic slag there are many other materials which contain appreciable amounts of phosphoric acid and may be used as valuable sources of this element. Such materials are as follows:

MATERIAL	PHOSPHORIC ACID CONTENT—PERCENT
Bone black (charcoal with sugar waste, filter material,	30
Raw bone meal	20-25
Steamed bone meal	25
Guano (bird and bat)	25
Marine Products	
Shrimp waste (dried)	10
Dried ground fish	7
Lobster refuse	3.5
Dried Blood	1 to 5
Tankage	2
Hoof and Horn Meal	2
Wool wastes	2-4
Cottonseed Meal	2-3
Raw Sugar wastes	8
Rape seed meal	1 to 2
Cocoa wastes	1.5
Castor Pomace	1 to 2
Silk Mill wastes	1.14
Activated sludge	2.5-4.0
Manure	
Dog, fresh	10
Poultry, fresh	1-1.5
dried	1.5-2.0
Goat and Sheep, fresh	0.6
dried	1.0-1.9
Hog, fresh	0.45
Horse, fresh	0.35
dried	1.0
Cow, fresh	0.25
dried	1.0
Wood ashes	1-2
Pea Pod wastes (ashed)	3
Banana residue (ashed)	2.3-3.3
Apple pomace (ashed skin)	3
Citrus wastes (orange skins, ashed)	3

Phosphorus Deficiency Signs in Plants

Vegetable crops. The symptoms of phosphorus deficiency in vegetable crops are slow growth and delayed maturity, which appear most frequently on young plants a few weeks old and may continue to maturity.

An early symptom in tomatoes is the development of a reddish purple color on the under side of the leaf. The color in the web of the leaf may first appear in spots and later spread over the entire leaf, with the veins finally becoming reddish-purple; the stems are slender and fibrous. The leaves are small, and the plant is late in setting fruit.

The symptoms of the radish are similar to that of the tomato, while celery exhibits poor root development and slender stalks.

Potato leaves change color from a normal healthy green to a dark green and afterwards to a peculiar bronze or yellow, beginning with the oldest leaves. The leaf, leaflets, and leaflet margins bend downward. Symptoms on the lower leaves may be pronounced while the top of the plant still has a normal appearance.

(*Continued on page 60*)

GOURD GARDENING

How to grow and use gourds.

By JANE GREEN

ALMOST every gardener has at one time or another, tried his "green thumb" with gourds. You pore over the seed catalog, looking long and wistfully at the fascinating picture of some happy gardener's gourd collection of both utilitarian and ornamental varieties; then you buy a package, plant and wait hopefully. If you are particularly lucky, you may get a riot of large-leafed vines and a profusion of lovely crepe-textured white blossoms, with a smattering promise of fruit before the whole project wilts under a blight, worm's attack or even the summer sun's heat! Comes another session with seed catalogs and you try again—and sometimes you actually harvest a creditable collection of your own.

From considerable experience I have found that gourds do best in sandy or loose soil, need plenty of water, and some protection from the hot sun. For instance, if the seeds are planted where the vines grow on the side of the house, porch, lattice or fence that is shaded partially from the afternoon sun, the vines have a much better chance of staying green and fresh until harvest.

Of course, you *never* get the exciting variety in your package that the picture promises, but you will probably be so thrilled with what does appear on the vines that you won't be too disappointed as you eagerly watch the young fruits develop. Gourds grow rapidly, but it takes several weeks for them to reach maturity. This stage is indicated by a hardening of the gourd and the stem's drying out, sort of like a ripe watermelon. The gourds are then ready to pull, and stored in an airy cool place for further drying or curing. This time varies with species and conditions, of course, but should require about two weeks. When the gourd appears much lighter in weight than when first pulled, and

Gourds can be painted, shellacked or varnished and made into attractive novelties.

the seed rattle when the gourd is shaken, it is properly cured and is ready to work up into novelties, useful containers or whatever direction your fancy takes. After all, they are *your* gourds and you can have all the fun with them that you have ever dreamed of during your catalog hours!

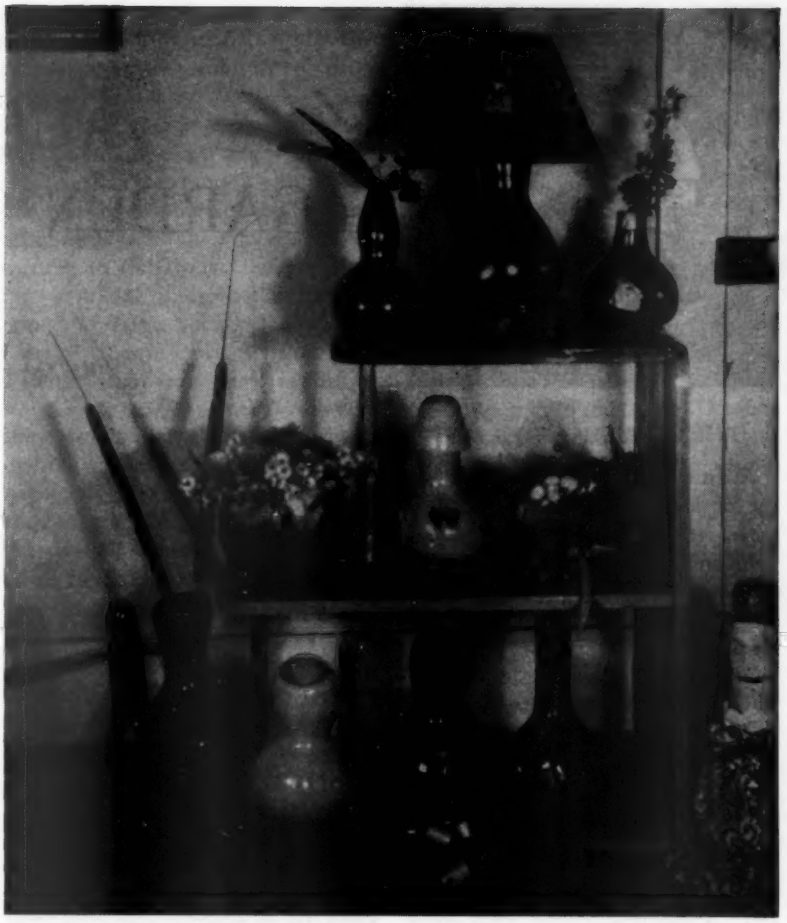
The accompanying photographs show some of the things that can easily be made from a collection of only three or four different varieties, and this is merely a start when you let yourself go with a knife and a few cans of paint.

Your first step, when the gourds are dry, is to scrape each one thoroughly with an instrument that is not too sharp. You should be careful not to cut or nick the gourd surface as you scrape off the thin green outer skin. Another period of drying, but usually a short period of only a few hours, is sufficient for this, and then you can begin the cutting operation. Decide what the gourd is to be used for before you cut into it. For instance, if you plan a long-necked vase you will saw off just a few inches of the stem end and clean out the seed with some long-handled implement. A wooden spoon is good for this purpose, and you can quickly whittle out the size suitable to reach down the longest necks. Incidentally, if you begin cleaning out gourds before the seed rattle inside, you will quickly learn about "Green as gourd g-ts!"

Save the stem ends, short or long. The short ones make jolly bells, ash trays, cups or pots for tiny winterized flowers. The long stem ends may be utilized for candlestick holders, wall vases and other uses.

Also, the seeds should not be discarded. Besides wanting to plant some of them, you will find that they make very lovely bead necklaces. They may be dyed or used in natural colors. The seeds are long and flat and easily pierced for stringing with the use of a tiny electric drill, darning needle or ice pick.

The gourds are next painted, shellacked or varnished. Personally, I find quick-drying enamel in strong, bright colors the happiest medium for most decorations of this sort. Orange is particularly good, as also are bright red, blue and green. Black for trimming, or a black bowl with contrasting color inside, makes good combinations. Again, you find much enjoyment with experiments of your own choice. Heavy enamel coating (one coat is usually sufficient for a smooth finish) gives the smooth richness of good pottery, and I like most items done in one color. However, you may add all sorts of decorative notes by drawing in scenes or motifs to suit your taste, or applying decals. Bright little pictures cut from magazines are just as effective as "bought-en" ones. If you apply shellac to the cut-outs, be sure that it is applied to the cut-out only and not the entire painted surface. Another caution is about using turpentine to thin your enamels. Don't! Turpentine seems to have a tendency towards making the paint peel off the gourd.



An attractive display of only a few of the novelties that can be made from gourds. Included in the arrangement are a lamp, door stop, work basket and fruit bowl.

The lamp shown in the picture is fitted with electric cord and sits on a varnished slab of mesquite wood with bark left on. The shade is in harmonizing colors with Mexican decals added for liveliness.

"Dora Dumb Doorstop" wears a straw hat and calico mother hubbard as she stands stoutly ready to defend her title! She, incidentally, is painted in flesh-pink and her features drawn in with crayons. With different dress, she could be a baby doll just as readily.

The work basket at the bottom of the picture is lined with bright silk and fitted with scissors, thread and thimble. The holes were drilled at regular spaces about the top of the

(*Continued on page* 61)

AUGUST GARDEN CALENDAR

By WILLIAM H. EYSTER, Ph. D.

THE NORTH AND EAST

August is an important month in the garden because it represents, in a sense, the transitional month between summer and autumn. It is the season for harvesting spring-planted crops and for planting seeds and seedlings for the autumn table and winter storage. Care should be taken to collect seeds from all varieties of flowers and vegetables which ripen in August and in following months. Home-grown seeds, from composted and mineralized soils, are superior in every way to commercial seeds.

Flower Garden:—Divide and transplant perennials which have completed their growth and are through the blooming period for the season: iris, lilies (madonna, candidum, umbellatum, Turk's), daffodils, colchicums, oriental poppies, fritillaria, Virginia bluebells, primroses and doronicum. It is well to place a handful of a mixture of equal parts of compost, sand, and leafmold under each bulb.

As soon as a sufficient amount of seed has been collected, the flower stalks should be removed to the compost heap to avoid self-seeding, unless this is desired in the case of hardy plants. Cut back overgrown petunia plants, sweet alyssum, nigella, and California poppies to prolong the flowering period. You can keep annuals blooming longer by keeping the flowers cut.

Make cuttings of the current year's growth just as soon as the stems begin to harden, including carnations, wall flower, geraniums, fuchsias, and other plants that you want for your winter window garden. Daphne cuttings may be rooted in a mixture of sand and peat, as they are acid-loving plants. English ivy cuttings made in August will make good plants before winter.

Chrysanthemums, which have been kept under black cloth to reduce the number of daylight hours, may be exposed to the natural day after August 15. Stake cosmos and other tall plants in danger of lodging. Thin out and replant rock garden plants. Cut and cure strawflowers and other everlastings for winter bouquets. Strip the leaves from the stems, tie in loose bunches, and hang them heads down in a cool airy place to dry.

Shrubs and Trees:—August-blooming shrubs are buddleia, abelia, Spanish broom, lavender, the heathers, crepe myrtle, and button bush (See inside of back cover). Roses should be watered and given a good mulching after applying a top dressing of compost. Hedges of privet and barberry should be pruned in August. Hedges can be kept most beautiful by frequent trimming.

Lawn:—Prevent crabgrass from going to seed in established lawns. Cut the lawn frequently. Crabgrass can also be discouraged by keeping the lawn grasses growing vigorously. For this, there is nothing better than finely screened compost, with a little phosphate rock and potash rock.

THE WEST

August is not too early to think of seeds, fruits of all kinds including pods and cones which can be fashioned into beautiful Christmas decorations. Some that are especially suitable are eucalyptus pods which occur in a wide variety of shapes and sizes, catalpa pods, peony capsules, the spiny heads of teasel which may be brilliantly stained, the thin spoon-shaped pods of jacaranda, the follicles of milkweeds, and the ornamental gourds. Also watch for volunteer seedlings that may be transplanted and grown for the Christmas season. They should be ready for potting in October.

Flower Garden:—Plant bulbs of calla, freezia, madonna lily, ornithogalum, oxalis, bulbous irises, and colchicum. Make cuttings of coleus, geranium, lavender, and heliotrope for your winter garden. Highly recommended for winter color are calendula, nemesia, Drummond's phlox. Transplant bleeding heart and oriental poppy. Make plant selections for next year of gerbera and delphinium while they are in bloom. Keep chrysanthemums pinched back to get bushy plants and plenty of flower heads. Feed them until the buds are fully formed but not after then. Moisture is one of the big problems in west coast gardens. Keep the soil mulched.

Sow seeds of perennials. Pot for spring forcing bulbs of narcissus, hyacinth, tulip, freesia, daffodil, and calla lily.

Shrubs and Trees:—Roses should be watered and well mulched with compost. Old canes of polyanthus and climbing roses should be cut out at this time. Shrubs may be

transplanted. Make cuttings of woody plants.

Lawn:—Do not cut the grass too closely during hot dry weather. Fertilize and mulch the grass with finely screened compost. Prepare the soil for new lawns and fill up uneven places in the lawn.

THE SOUTH

August is a hot month in the South but there always are garden chores to be done.

The Flower Garden:—Bearded iris and matured bulbs may be taken up and dried off in a shaded airy place. The irises can be replanted at any time. This is the time also to plant all kinds of narcissus, madonna lilies, and such fall-blooming bulbous plants as lycoris, sternbergia, and hydranthus. August is the best time to transplant camellias. Transplant pansies and violas now for autumn blooms. Sweet peas for Christmas should be planted this month. Dahlias may be given a feeding, and for large heads, pinch off the secondary buds.

THE LOWER SOUTH •

The Flower Garden:—Plantings for this month include gaillardia, helianthus or ornamental sunflower, hollyhock, portulaca, verbena, vinca or myrtle, and zinnia.

Vegetable Garden:—With the coming of August, a number of things can be planted that are not suitable during mid-summer. Plant broccoli, brussels sprouts, cabbage, Chinese cabbage, cauliflower, celery, collard, cucumber, eggplant, endive, garlic, kale, lettuce, mustard, okra, onion sets, pepper, potatoes, radish, romaine, rutabaga, spinach, squash, tomato, turnip. To the correspondent in Coral Gables who wrote regarding his experience with colloidal phosphate, it is suggested that when next he uses it, he can get better action by handling it in a different way. Treating his 2500 plants with the phosphate that he put in furrows under the plants, he should not expect to see any results. Used in this way it would be slow to act, especially in his soil, which was almost if not entirely lacking in humus, and the soil and root acids were not there in sufficient quantities to render the phosphate water-soluble, and available to the plants. To hasten the action, mix generous quantities of the phosphate with compost. The organisms in the compost will release more acids making available more phosphoric acid than any soil. According to the Hoover Soil Service, this colloidal phosphate, which is mined at High Springs, in central Florida, house plants that are watered often, can show action in from 10 to 15 days; on clover and alfalfa, great improvement has been seen in 5 to 6 weeks. As our friend says he is starting a large supply of compost, with kelp, cattle manure, lime, etc., and with earthworms to assist, he is now on the right track and should get satisfactory results from his next crop.

Trees and Shrubs:—Japanese persimmons, one of the finest of fruits, are well adapted to Florida conditions and are soon large enough to begin bearing if trees selected are of proper size when set out. There are several good varieties available. One of the best is the Tane Nashi. These cultivated varieties are much superior to the wild trees, as well as bearing much larger fruit.

THE SOUTHWEST ••

The Flower Garden:—August is one of the trying months in the Garden Calendar of the Southwest. Every precaution must be taken to conserve moisture and keep plants from drying out during our long, hot, rainless summer. Moisture should be conserved by top mulching and the generous use of compost. Select the most economical methods of applying water. Soil soakers and Ross deep-irrigators are invaluable. Regular hosing off will keep your foliage clean and vigorous. Planting should be limited to the best heat-resistant annuals which love a place in the sun, such as ageratum, asters, the splendid varieties of cosmos, French and African marigolds, petunias, verbenas, and zinnias. Amateurs are advised to depend upon plants established in plant bands which are available at all our local nurseries. For color during September, October, and November set immediately wilt-resistant asters, California Giant Ruffled petunias, French and African Marigolds and annual gaillardias to accompany your dahlias and chrysanthemums. Ground should be prepared for Christmas sweet peas. The new Cuthburton are highly recommended. Those plantings which are in the first of the month will commence blooming by Thanksgiving. Spade over your ground for October planted lawns, incorporating compost and well-rotted manure. Allow successive crops of weeds to come up in order to save back-breaking weeding later. If you have the proper facilities for doing your own propagating you can sow primulas, cinerarias, tetra-snapdragons, stocks, pansies, and violas for winter bloom. A few bulbs which give results immediately should be planted as soon as available. *Sternbergia lutea* and the various colchicums belong to this class.

The early blooming bulbs such as freesias, sparaxis and watsonias, and other South Africans can be planted along with our native bulbs. The Tazetta Narcissus (Paper White Soleil d'Or and Chinese Lilies) should be put in as soon as obtainable so as to have them in bloom for the holiday seasons. Stake, feed and water your dahlias and chrysanthemums.

Shrubs and Trees:—Be careful that your deciduous trees are kept growing continuously by being watered and mulched afterwards. Water oranges and all other citrus fruits every four or five weeks. If you use the basin method, a soil soaker placed at the drip line does the work very effectively. Maintain a protecting ridge around the trunk and be careful not to cover up the bud union. With the exception of lilacs, encourage your deciduous shrubs to continue their strong new

(*Continued on page* 61)

• Edwin H. Abrams, St. Cloud, Florida.

•• Charlotte M. Hoak, 1125 Stratford Ave, So. Pasadena, California.

MISCELLANY

By J. I. RODALE

Good News From California

The following has recently been enacted on the statute books of the State of California:

Assembly Bill No. 2033
Chapter 1575

"Section 1. There is hereby appropriated to the Regents of the University of California, out of any money in the State Treasury not otherwise appropriated, the sum of one hundred thousand dollars ($100,000), to be available for expenditure by the Regents of the University of California until June 30, 1951, in providing for and carrying on research relating to the technical problems of disposal of sewage, garbage and industrial waste and for the dissemination of such research information to all persons within the State affected by or interested therein.

"Section 2. This act is an urgency measure necessary for the immediate preservation of the public peace, health or safety within the meaning of Article IV of the Constitution and shall go into immediate effect. The facts constituting such necessity are:

"The rapid growth of cities and industry in California has created conditions of imminent hazard to the public health and welfare through the inadequacy of existing methods for the sanitary disposal of garbage, sewage and industrial waste.

"Since in many areas of the State physical methods for such sanitary disposal, within economic limits, are not known, it is essential that a program of research to determine those methods be undertaken at once."

In answer to a request for information we received the following letter:

University of California
Department of Engineering
Sanitary Engineering Research Project
Berkeley, 4, California.

May 25, 1950

Dear Mr. Rodale:

In response to your request for information regarding our grant from the California State Legislature, we enclose a copy of "Pollution Control Legislation." The money mentioned in Assembly Bill No. 2033, Chapter 1575 (page 31) is to be used at the discretion of the University of California for the study of the problems of disposing of garbage, sewage and industrial wastes. We felt that composting was a possible and even desirable means of disposing of organic wastes, and therefore engaged in a study of the applicability of this method to disposal on a municipal scale.

Very truly yours,
Max L. Panzer
Sanitary Biologist

It is interesting to note that Mr. Panzer feels that composting of the garbage, sewage and industrial wastes is desirable. I have an idea that this appropriation is an outgrowth of the trouble experienced in recent years in California agriculture. Disease in the fields is rampant. Something must be done to preserve every bit of organic matter possible and the State legislature has started the ball rolling nicely. Much is going on behind the scenes in the United States that would warm the heart of every organiculturist. Every issue of this magazine will show evidence of it.

Phosphate Rock

I have just received a report from the state of Illinois giving the statistics of fertilizer usage in that state for the half year period ending Dec. 31, 1949. It is interesting. It shows up as follows:

Superphosphate	18.171	TONS
Phosphate rock	279.339	"
Animal manure	.820	"
Sewage sludge	1.925	"
Bone meal	.123	"
Nitrate of soda	.162	"
Other fertilizers (chemical)	93.578	"
TOTAL	394.118	

It is interesting to note that in Illinois the farmers use about fifteen times more of phosphate rock than superphosphate. Those who are using superphosphate are simply wasting money. The University of Illinois has shown time and time again that better or just as good yields can be obtained with the cheaper phosphate rock which does not leave a harmful sulphur residue in the soil. It is interesting to note that farmers in Illinois use about 2½ times more of phosphate rock as against the total of all chemical fertilizers. In this state, therefore, it would not be much of a problem to have the whole state adopt the organic method.

The New Mulch Method

I have been observing heavy mulches that we placed under apple trees last fall, consisting of ground corncobs, leaves, hay, etc. It was about eight inches of well compacted material. Nothing much happened to it over the winter, due to low temperatures, but in the spring a composting process began, and by digging to the bottom of it we could see how nice the stuff was decaying. In a compost heap the first part of the process is done by the fungi, rather than the bacteria. In the mulch the same thing is true as we could see by the many sporophores or mushrooms that began to grow in the mulch. They are fungi.

A little after the first turn in the Sir Albert Howard method of making compost, the fungal stage is complete. Then the bacteria take over. Seeing the sporophores growing in the mulch makes you think because it is thrust right under your nose so to speak. You suddenly remember that fungi thrive under acid conditions while bacteria prefer

it neutral to slightly alkaline, but in making compost we advise mixing in the ground lime-stone at the very beginning, just when the fungi which like it acid are ready to go to work. So you think, would it not be better not to mix in the lime at the beginning but to do it at the first turning of the compost. We expect to make an experiment making two compost heaps to check on these. Ordinarily we must make the first turn in three weeks. In this case, we will do so in five so as to give the fungi a chance to complete their work. The second turn will be made about five weeks later and we will consider the compost ready about four months from the beginning.

Babylonia

I was reading a book called *Babylonian Literature,* by Rev. A. H. Sayce and in it I came across the following: "The garden was sometimes called the orchard, and most houses possessed one. The weeds and waste produce of the ground were burned in the most approved fashion." We can now see why the old civilizations did not survive. They did not have a true conception of soil fertility. Babylonia would have fallen long before it did if it were not for its elaborate system of canals which trapped the rain-waters and fed it to the soil by means of an irrigation system, of which the canals were the basis.

In a magazine called *Agricultural Chemicales* (March, 1950) there appears a statement as follows "Presumably, as in the song, when a plant is healthy, nurtured by natural organic fertilizers, instead of the unnatural store-boughten type, 'the bugs fall off the vine.' Personally, we're still a little skeptical. Didn't locusts eat up the crops in ancient Egypt long before the days of chemical fertilizers?" In answering this critic let us remember the practice of the ancient Babylonian who burned the weeds and waste produce of the ground in the most approved fashion. From a study of history, which from now on will be referred to in this department from time to time, it can be seen that one of the most potent reasons for the downfall of most of these old civilizations was an abuse of the land. Where is Egypt today as a world power? Her decline is closely tied in with the depletion of her soils. The coming of the locusts was a sure symptom of that depletion.

All of the Eastern nations lived closely together and their civilization and daily customs of living were interlocked. All of them showed a disregard for the requirements of the soil and its proper maintenance—even the Hebrews. King Solomon ruthlessly cut down millions of forest trees without replanting. In Kings 5-15 it says, "And Solomon had threescore and ten thousand that bare burdens, and fourscore thousand hewers in the mountains." In such a tiny country he maintained 80,000 hewers of wood in the mountains. Wood was the principal item of export which Solomon engaged in to build more palaces and harems for his wives with their necessary splendor. After the death of Solomon, the Hebrew nation broke into two parts—the ten northern tribes against Judah and Benjamin and soon they were conquered by other powers. These things are closely integrated with the quality of food and the fertility of the soil of nations. There is much evidence right in the Bible that throws additional light on this question.

Brazil Visitors

A few days ago we had a visit from several charming Brazilians who own a coffee plantation consisting of half a million trees. They were brought to our farm by a representative of Otis McAlester Company, a large importing concern of New York City. This concern owns coffee plantations in Costa Rica that are operating by the organic method and are enjoying yields 40 per cent greater than other coffee growers. I was explaining to the Brazilians the new organic method of putting the composting ingredients under the trees as a mulch. They replied that when they pick the coffee, some of the beans would fall into the mulch and not be recoverable. My answer to that was that they must therefore grind the mulch material rather fine so that it will hold such beans on the surface. The basis therefore, of such a method on a coffee plantation must be a very good grinding machine.

Connecticut Agricultural Experiment Station

At this station a very significant experiment is in progress to see if wood waste can be used as a source of organic matter for agricultural soils. The experiment is headed by Dr. H. A. Lunt who won fame a few years ago by analyzing earthworm castings and demonstrating how much richer they were than the soils in which they worked. This same station has just issued a bulletin entitled "Granite Stone Meal as a source of potash for tobacco," which demonstrated that in growing tobacco in Connecticut, the raw ground potash rock was superior to the chemical sulphate form of potash. It is a breathtaking piece of work which greatly strengthens the position of the organic movement. Our hat is off to Dr. Horsfall of this station and his staff and the Rockefeller family, whose money is used liberally in financing the research work at this station. In the September issue I will give a detailed account of this potash experiment.

In the experiment with wood wastes, Dr. Lunt and his associates are growing beets and spinach in greenhouse pots containing soil in which wood chips have been mixed. They are going to study the possible toxic effect of such materials on crops. In some of the tests they will try composting the chips before application.

Dr. Waksman

In the June issue of the *Reader's Digest* there is an article "The Wonder World Under Our Feet," by Max

Eastman which represents an interview with Dr. Selman A. Waksman, the discoverer of streptomycin, of Rutgers University, which starts off as a discussion of antibiotic organisms but ends up by attacking the organic method of farming and gardening, in which Waksman refers to organiculture as mystical nonsense, that we are driven to extremes and to semi-occult beliefs. I wonder what Dr. Waksman's reaction would be to the discovery regarding potash rock at the Connecticut station.

Waksman is a wonderful man and one of these days may yet do some research that will help the organic method against the chemical. I remember a visit I made to his office at Rutgers a few years ago. After we chatted for a while he looked at me slyly, opened up the drawer of his desk, and produced my book, *Pay Dirt*.

"You see," he said, "I am reading your book."

Organic Strawberries

The Detroit News, under date of May 28, 1950 prints a photograph of a man and his daughter picking strawberries with the heading "Chemical Vs. Organic Gardening," and under the picture appears the caption: "Growing strawberries by organic gardening has been a profitable hobby for Dewitt G. Tyler, pictured above with his daughter, Geneva. After four years of rotating cover crops, Tyler put in 7,000 plants. 'The quality and size of my berries is superior,' Tyler said, 'and the profit high. Every plant in my field has blossoms, which is unusual in ordinary patches."

The Forests

A reader sent in a newspaper item showing an invasion in Oregon of spruce budworms and caterpillars which have eaten their way into more than two million acres of the finest Douglas and white fir timberlands in Oregon and Washington. We also hear of the oak wilt attacking trees in the mid-west. Then there is the dutch elm trees disease, and we can all remember when the chestnut trees flourished in the forest.

This reader writes:

Dear Mr. Rodale,

I am firmly convinced you are on the right track with organic method of farming and gardening.

However, articles like that enclosed make me have some doubts about whether or not completely natural forests can resist bugs. Surely the spruce forests of Oregon are not being commercially fertilized. Surely they leave the leaves and organic matter in the forests.

How can we explain this unnatural bug infestation in wild forests?

Respectfully yours,

There is some belief that just as man rotates his crops on farms so does nature do so in the forest, except that where man uses a four or five year cycle of rotation, in the forests, nature works on a cycle of hundreds of years. Certain species die out and others come to take their place. Old-timers claim that when they were young, certain kinds of trees would spring up in open places which they do not see today. One of the reasons for rotating crops is that the continuous piling up of residues from one kind of plant or tree may accentuate some toxic quality in the residue, or some kind of deficiency. In nature we know that there is an acknowledged principle—a struggle for existence. In nature few things are static, like the redwoods on the Pacific Coast. There is a reason for everything if we can delve deep enough and long enough. Perhaps trees grow too close together and the sun cannot get to them. The very leaves that fall may be the forests final ruination or you may call it its control. They create such a rich fertility that too many trees spring up for their own good. In life we must expect some trouble.

The Soil and Health Foundation

The Soil and Health Foundation has been organized and incorporated in the Courts of the State of Pennsylvania for the following general purposes:

(a) To promote, foster and encourage the use of humus and other organic matter in order to maintain and improve soil fertility, to prevent soil erosion, and to improve the health of man.

(b) To conduct, engage in, foster and encourage scientific research and study and teaching, training, informing and educating the public on and concerning the soil, foods and health of man—and their relation to each other.

(c) To study the effects of organic and artificial fertilizers on soil, plants, animals and man.

(d) In order to accomplish the foregoing purposes to establish, use, maintain and operate farms, schools, laboratories, experimental stations, publishing houses and all other appropriate agencies, means and instruments.

The formation of the SOIL AND HEALTH FOUNDATION stems directly from the work of Sir Albert Howard, who over a period of more than thirty years proved that the use of artificial, chemical fertilizers was producing food with lower vitamin and nutritional content than foods produced in soils where organic matter in the forms of animal manures, weeds, leaves and other green matter made into composts enriched the ground. There is sufficient evidence to show that such practices caused less soil erosion and resulted in better health for man and beast.

Through its publications, the Foundation will publicize the results of its investigations and endeavor to educate farmers, gardeners, and the public in general in cultural practices which will insure the better conservation of our soils and the public health.

All who make contributions to this Foundation become members, regardless of the amount given. A contribution continues the membership for a year. Will all members who have not done so, send their contributions for another year to the Secretary, Soil and Health Foundation, Emmaus, Pa.

HINTS for the FLOWER GARDEN

You Can Take It With You

With so many Americans "on the move" today, it is only natural that we miss our gardens when our work demands that we move on to new locations. But you *can* take your garden with you, or at least a part of it, and start a "flower pot" garden. Hardier plants can be potted, others wrapped in burlap and they'll take but little room from your regular packing space. In fact, if old newspapers are wedged around pots, buckets, and packages, they'll help make the load more secure. Small plants, rooted specimens and the like can often be sent by mail for only a few cents.

Attractive Flower Boxes

Flower boxes may be used by the windows or steps of the front of your house to display your best blooming flowers throughout the summer. This may be done by growing some of your garden flowers in pots or containers. The best looking plants should be kept in the flower box only while they are in the height of their bloom. Then remove these plants back to the garden and give some of your other plants a chance at this place of distinction in the front of the house.

The pots or containers in the flower box may be hidden if green twigs of cedar, pine, or any hardy vines are used. If the green branches are set in moist earth and watered frequently, they'll stay fresh a long time.

Don't Forget

To have forget-me-nots in bloom early next year, the seed should be sown this month. They make an attractive carpet planting for tulip beds.

Poppies

By midsummer, Oriental poppy foliage has died down and it is time to reset or move them. Along in August and September, new foliage is formed as the plants get ready for winter.

When to Cut

Cut buds of the Heavenly Blue morning glory the night before they are ready to open, and use them for breakfast table arrangements. Cuttings made from English ivy now wil produce good house plants for winter.

For Winter

To get dried sprays of gypsophila for the winter, cut them now when in full bloom. Cut the sprays on a hot day, and dry them in the shade. Store when thoroughly dry in cartons lined with paper. Strawflowers should be hung up, heads down, while drying. Most herbs are spiciest if cut just before the flower opens.

Safe Transport for Beauty

When cutting flowers to bring into the house, the main problem is to prevent their falling all over each other in the bucket or basket in which they are carried. Often some are too badly bruised to use by the time they reach the house, especially if large foliage or shrub branches are cut also. To gather a large number of flowers or a few large flowers such as giant dahlias, zinnias, etc., crumple chicken wire into a regular-sized bucket. You may then insert the stems so that the heads of the beauties are kept from knocking each other out.

Ready, Set... GROW with BIO-GRO

The only true LIQUID FISH FERTILIZER and ORGANIC PLANT FOOD

- Promotes Growth of FLOWERS, LAWNS, BUSHES, VEGETABLES, POTTED PLANTS...
- CONCENTRATED—Ready for Instant Use...
- Has NO UNPLEASANT ODOR!

You'll be amazed at the way your growing things thrive on BIO-GRO! It's absolutely NEW; a liquefied organic fish fertilizer with added micronutrients. Nutritionally complete—neutral in pH—absolutely SAFE for all plants. ECONOMICAL, too. One pint makes 40 to 100 gallons of nourishing, pure liquid plant food.

You can get BIO-GRO from most seed stores; or order by mail. Pint cans $1.00; quarts $1.65 or half-pint trial size 60c—all postpaid. Write "Bio-Gro Division Bioproducts."

ORDER NOW!

Make this year's garden your finest ...with BIO-GRO!

MANUFACTURED BY BIOPRODUCTS Corp. Ltd.

WARRENTON, OREGON

GRIND YOUR OWN WHOLE GRAIN FLOUR

and you will know that it contains no agene or other preservative or chemical. The flavor alone will tell you how much better it is. A postcard will bring full particulars.

LEE ENGINEERING COMPANY

Milwaukee 3, Wisconsin

New Life for Gardens

Q. R. Compost-Maker changes all vegetable waste in a few short weeks into rich, sweet-smelling compost with a thriving worm population which ensures soil yielding bigger, better crops and lovelier finer-scented flowers. Its results are really remarkable.

PURELY HERBAL—NO CHEMICALS

For economy of time, cost and labour Q. R. is unrivalled and its use may be profitably continued without fear of ultimately impoverishing the soil.

NO TURNING NEEDED WITH Q. R.

"The compost made with Q. R. brought most gratifying results in our garden and we are very enthusiastic about it." (Ohio).

"Q. R. has given marvelous results with our Gladioli, Delphiniums, Bench Roses, and particularly with Strawberries." (Minneapolis).

TESTIMONY FROM ALL OVER THE WORLD

QR

HERBAL ACTIVATOR

Special Offer to Readers

To encourage you to try Q. R. we are supplying a large Package.

Special Price **$1.00** Post Paid

Obtainable from:

JAMES S. WELLS
P. O. Box 45, Deerfield, N. J.
and **ERNEST D. KILEY**

93 Artic Bldg.
3rd Avenue
Seattle 4, Wash.

P. O. Box 994
640 Burrard Str.
Vancouver, B. C.

Proprietors and Manufacturers:
CHASE LTD., CLOCHE HOUSE, SHEPPERTON, ENG.

ORGANIC SUPPLEMENTS

TO increase the NPK of your garden organically, we offer the following supplements—

For Nitrogen (N)

DECOMPOSED ORGANICS—an excellent plant food containing nitrogen fixing organisms.

For Phosphorus (P)

BONE MEAL & RAW PHOSPHATE ROCK—finely pulverized natural rock phosphate.

For Potassium (K)

ORGANIC POTASH—a natural organic derived from an organic ash. No acid or acid reactive substances.

These products may be ordered separately, or blended into a well balanced plant food. Each item contains many of the trace elements so essential to your soil.

Write today for full information!

ORGANIC PLANT FOOD CO.
P. O. Box 132 Lancaster, Pa.

Protection

Muskmelons and watermelons will not be troubled with decay and wireworms if a thin board is placed under each one. Shingles placed close to squash vines will trap squash bugs. Look under them in early morning and destroy the bugs.

Brussels Sprouts

Firm the soil around brussels sprouts so that they will form sprouts instead of making leaf growth.

Testing Beans

Press the bloom end of the pod between the thumb and finger. If it feels spongy, the beans are full grown and ready for the table.

Onion Keeping Quality

The white onions are the quickest to spoil so these should be used first. Yellow onions keep better.

Asparagus

Apply a mulch of well rotted compost to the asparagus bed after cutting the stalks to the ground when they have turned yellow.

Care of Tools

Protect your smaller garden tools from rusting by plunging them into a pail of sand kept in the tool shed for this purpose.

Garbage Treatment

Kitchen refuse from each meal, if well dusted with Cayenne pepper when scraped into the kitchen garbage can, will not attract rats or domestic animals. In hot weather, keep all the weeds and grass cuttings in bushel baskets to throw over the garbage. If flies start to appear, dust the top of the heap with lime. If a neighbor's rat comes around, he just takes one sniff and runs away.

Better Germination

A simple trick in getting prompt germination in hot, dry weather is to soak the seed in water over night or for two to three days, before sowing. Dry them off by mixing with dry soil. In planting, make a furrow three inches deep. Soak it thoroughly, rake in one inch or more of moist compost. In this, plant the seeds and cover to a required depth. See the quick start your fall crops will make.

Storing Root Crops

Winter storage of root crops is simplified by packing them in covered crocks, preserving kettles, etc., and placing a jar of water in upper part of the pack. Evaporation of this water, when crocks are kept in a cool cellar, prevents shrivelling of the contents.

Season's Last Tomatoes

Bring in the last of your tomatoes before frost, plants, fruit and all. Hang in a cool cellar or attic where the fruit will ripen and be usable well into fall.

Late Lettuce

For sowing in the cold frame, use Mignonette, Oakleaf, and Paris White Cos Lettuce. These carry well into the winter.

Better Hill Crops

Hill crops, such as cucumbers, are aided by a three inch layer of mulching material. (Compost is excellent for this purpose.)

Late Spinach

Soak seeds of spinach twenty-four hours before sowing to aid germination. Spinach planted now will continue growth until after the first snow flurries.

Thanksgiving Radishes

You can have ripe red radishes for Thanksgiving if you plant seeds in the cold frame at this time.

MIRACLE OF THE MULCHES

Recent experiments show astonishing value in the use of straw and other litter on the soil in which crops are growing.

By J. SYDNEY CATES

(Reprinted by special permission from the Country Gentleman.)

FOR many long years tillage and dust mulch have been central themes in agricultural orthodoxy. Yet, while much has been said, surprisingly little of an experimental nature has been done about these matters.

Thirty years ago, while in research work with the Department of Agriculture, I published a comprehensive thesis on the relation of weeds to the tillage needs of corn. The study showed that, if you keep weeds and grass out of a cornfield, cultivating the ground after the crop is planted does no good at all—that frequently it does harm. That thesis was fought for a long time, but finally it has been accepted by practically all research institutions in agriculture.

Of course, laying the ghost of the dust mulch, and of the value of tillage as such in promoting the growth of row crops, leads us right up to the theme of what can be done to keep down row-crop weeds and grass if the cultivator is going to stand idle. Present-day developments in the use of a litter mulch, heavy enough to smother out weeds and grass in row crops, seem to point not only to a new practice which may become of vast importance to agriculture—particularly the horticultural side of agriculture—but also to a new understanding of ideal growth conditions for plants.

The mulch put on in lieu of cultivation is resulting in crop growth performance so startlingly superior to what we got from clean cultivation that it is difficult to explain what has happened. Precious little has been published about these mulching experiments; in fact, many of them are not official research projects, but they add up to a startlingly hopeful array of facts.

Two years ago I reported on the work by Dr. George M. Darrow and Dr. J. H. Clark in bringing the modern blueberries up out of the swamps and muck land and growing them successfully, under mulch, on most any upland soil. But the blueberry is a special crop, supposedly with all sorts of mysterious requirements for best growth, and nobody seemed to think that this incident might fit into a general mulching picture. Apparently, however, that is just where it does fit.

Last summer at the New Jersey Experiment Station I viewed even more striking results from mulching tomatoes. In a typical experiment the clean-cultivated tomato plot produced at the rate of thirteen tons to the acre. The mulched plot alongside produced just double—twenty-six tons to the acre. Sweet potatoes and several other New Jersey crops have shown the same striking growth increase under mulching as compared with ordinary clean cultivation.

Potato Yields Doubled

Having in mind the drought conditions last summer, I suggested to Doctor Clark that these striking yield differences between the cultivated and the mulched plots might be due to the moisture-holding effect of the mulch. But apparently the explanation is not so simple, because Doctor Clark came back with the amazing announcement that the mulched plots always show up to their best advantage when the season is extra wet!

And then he suggested another

Burpee
Giant Trumpet
Daffodils
All You Want at this New Low Price!
5¢ EACH
Long Trumpets, largest flowers, on tall stems. Yellows, whites and bicolors, MIXED. Guaranteed to bloom; will live for years. *Sent postpaid:*

DOLLAR SPECIALS
Giant Trumpet Daffodils $1 as described above. 20 Bulbs
Large Flowered Crocus All best colors mixed. $1 50 Bulbs
Tall Giant Darwin Tulips All best colors mixed. $1 10 Bulbs
Fantasy Parrot Tulips Most beautiful of all tulips. $1 10 Bulbs
Red Emperor Tulips largest, earliest, tall gt. tulip. $1 10 Bulbs
Large Fragrant Hyacinths All best colors mixed $1 6 Bulbs
Any 3 $1 Lots for $2.75; ALL 6 FOR $5.00, postpaid.

20 Bulbs $1.00
50 Bulbs $2.50
100 Bulbs $5.00
Order Today!

Burpee Fall Bulb Book FREE
Fine newer kinds, Tulips, Daffodils, Hyacinths, Crocus at very moderate prices.

Plant This Fall!

W. Atlee Burpee Co.
Address: 221 Burpee Building *at nearest city:* Phila. 32, Pa. *or* Clinton, Iowa *or* Riverside, Calif.

STASSEN'S
FALL FLOWERING CROCUS

Imported from Holland

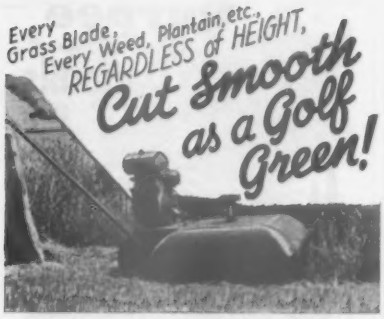
10 for 25c
100 for $2.00 ppd.
Lilac-Blue Crocus guaranteed to bloom OUTDOORS early this fall (or INDOORS without soil or water). Hardy—multiply readily in garden. Shipped in August with planting instructions.
Send For Full Color Catalogue Of Holland Bulbs
STASSEN FLORAL GARDENS INC.
DEPT. 19, ROSLYN HEIGHTS, N. Y.

CROCUS
75 bulbs for $1

Guaranteed blooming size. A mixture of Species and Dutch crocus, up to 20 VARIETIES all colors and shades known to the crocus family. Ideal for your spring Borders or Rockeries, also for potting.
CLOTH OF GOLD, CLOTH OF SILVER and TOMASINIANUS (lavender). Earliest of species Crocus. 50 one variety $1.00. Postpaid.
Pans-Iola Gardens Marysville, Washington

RAINBOW
100 TULIPS $2.98 POSTPAID IN U.S.
BLOOMING SIZE BULBS
Unusual assortment of gorgeous colors. Every bulb 3½" to 4" circumference—as large around as a Half Dollar—*not the small "bargain" grade.* Order NOW—we'll ship at best time for fall planting. *No C.O.D.'s, please.* **NEW FALL CATALOG** offers choicest varieties of **Tulips, Narcissus, Dwarf Fruit Trees, Shrubs, Roses, Evergreens, Fruits and Perennials.** *Lowest Prices.* It's FREE — Write today.
THE WHITTEN NURSERIES, Box 670, Bridgman, Mich.

DWARF FRUIT TREES
Best heavy producing varieties; also standard fruit trees, berries, grapes, shade and nut trees, ornamentals. Our 75 years experience Guarantees your Satisfaction. Write us about your requirements.
J. E. MILLER NURSERIES
548 W. Lake Rd. Canandaigua, N. Y.



ROTO - CUTTER Cuts 20" swath perfectly reduces to a fine mulch.

Do ALL your grass cutting and trimming in one operation—No after-trimming around shrubs, evergreens, along borders, etc. Cuts backward, forward or sidewise in arc—covers more surface with less effort.

Streamlined housing incloses blades and 4 large wheels,—lifts edges of shrubs to trim underneath—prevents damage, insures safe operation.

Cutter easily detached so power unit can be used with Roto-Hoe attachment for perfect garden preparation and cultivation, or used as portable power for saw, pump, sprayer, grinder, etc. A really versatile machine.

Buy the Roto-Cutter as shown, equipped with 2 h.p. Lauson engine, for only $122. Roto-Hoe attachment can be ADDED ANY TIME (only $52.)

Ask your dealer for demonstration or write for information. Dealer inquiries invited.

ROTO — HOE and SPRAYER CO.
DEPT. 2. NOVELTY, OHIO

Clean Chimneys Permanently

Stops down draft—prevents furnace explosions. Satisfaction guaranteed. This copper pot (with character). Mailable. For free booklet address

WIG., ABINGTON, MASS.

SAVES FUEL

and even simpler explanation. Cultivation prunes the roots out of the first four or five inches of the soil, and surface drying after the cultivation season is over tends to keep roots low. Under the mulch covering, however, the roots have access all the season to this rich top five inches of soil, and simply thread it full of feeders.

In the maze of factors which add up to good or bad growing conditions we are very prone to pick out some for study and forget all about others. I am inclined to think that soil bacterial population and activity have much to do with this vague thing we call soil fertility. And while no soil bacterial studies that I can find have been made for soils under mulch as compared to clean cultivation, it is generally recognized that the bacterial flora is vastly greater in the covered soil. In fact, it is common observation that mulched crops must have an abundant nitrogen fertilizer supply, else the crop will show temporary nitrogen starvation. This is true because soil bacteria stimulated by the better growth conditions under the mulch tend to gobble up available soil nitrogen. Of course, these tiny motes of vegetable life soon die and decay, and give back to the soil quickly available higher-plant food. But there is a lag when you first mulch during which they need to be fed extra nitrogen. The bacteria, though, are more than worth their keep.

The New Jersey Station has got excellent results from growing small blocks of peaches and grapes under mulch. They have used, in the main, marsh hay. Straw or any available cheap roughage would serve the same purpose.

Many years ago, down in Southwestern Kentucky, I encountered an excellent farm practice in using a straw mulching to secure a perfect stand and growth of red clover seeded on wheat. Straw was scattered thinly over wheat fields in the fall when wheat was just coming up, or even after it had made considerable growth. The straw, of course, was not spread thick enough to smother the wheat. Late winter seeding of clover on this straw-mulched wheat, always resulted, I was told, in a perfect clover stand.

Throughout the South during recent years, the Soil Conservation Service has successfully used mulching to get lespedeza established on land so poor and eroded as to appear almost completely worthless. In one of their reported experiments, a galled, semigullied area was levelled off and seeded to Kobe lespedeza, given a fair dose of phosphate and then coated with a straw mulching. The lespedeza responded with a two-ton hay yield, and then matured a seed crop to give a thick volunteer stand and even better growth the next season.

I have repeatedly seen the rank-growing perennial, *Lespedeza sericea*, established and growing carefree under similar conditions and treatment. This method for getting such sods established on apparently impossible land seems to be absolutely sure-fire.

While the use of mulch in starting sod crops under hard conditions is a device of vast practical value, perhaps the greater number of farms throughout America can make their best beginning with mulch on home garden, orchard, and small fruit crops.

Not only has the blueberry responded to mulching on upland soils but later work by Doctor Darrow indicates that the fine-quality red raspberries, when grown under a similar mulch, will perform in excellent fashion far outside the normal range of this somewhat regionally temperamental fruit. All the berries and small fruits thrive amazingly under mulching.

Mulching apple orchards is an old, old practice in many sections of the country. In New England, commercial orchardists pay six to eight dollars a ton for low-grade hay to use in orchard mulching. In the West, also, large quantities of low-grade alfalfa hay are bought for the same purpose. As a rule, commercial orchardists are well informed about the

practice and value of mulching. What I am particularly keen about is the expansion of the mulching practice to the millions of noncommercial home orchards, gardens and small-fruit plantings.

Mulching in one lick at the job solves the weed problem, the cultivation problem and the erosion problem, and at the same time brings outstanding yields. Furthermore, the ordinary farm has enough available straw, low-grade hay or other roughage available to carry out a mulching program on a few acres.

I have talked with a number of forage-crop men about the possibility of profitably growing certain types of forage just as a source of mulching material. Throughout a great part of the north country, Reed Canary grass makes an enormous tonnage, though the forage is not of the highest quality for feeding purposes.

South of the Ohio and Potomac, *Lespedeza sericea* will make two to five or more tons of dry forage on soil that would seem famine ration to other crops. In the Lower South crotolaria makes phenomenal growth under soil conditions too poor for success with most planted things. In fact, most every section of the country has some well-adapted, rank-yielding forage-crop variety that will furnish an abundance of mulching at low cost.

There has been precious little definite experimenting done with this mulching scheme of growing crops. And the experimenting, as a rule, has been fragmentary. Only a small portion of what has been done has been published in scientific papers. But during the past couple of years I have heard more enthusiastic discussion of mulching by top-flight horticulturists, erosion-control specialists, and agronomists than I have about any other phase of the production side of farming. Equally as amazing as the phenomenal growth response from mulching has been the effect in stopping sheet erosion. Sloping soils that have been peeling off from the surface at every rain, stay strictly in place when given even a slight coating of roughage.

And soil students now claim that the pounding effect of the raindrops puddles and packs the surface soil in a deleterious way. This is prevented when mulching material instead of the cultivator is the device for keeping down weeds and grass in row-planted things.

A number of years ago, that distinguished scholar, the late G. N. Collins, who headed the Bio-physical Laboratory of the Department of Agriculture, carried on extensive studies in an effort to find out just how mulching served to make plants grow so much more vigorously. But the farther Collins got into this problem the more mysteries he uncovered. The work of Collins has never been published, because he never succeeded in nailing down an answer. Collins repeatedly got the same stimulating effect from mulching no matter whether his experiments were in the open field under just such weather as happened to come along or in the greenhouse where temperature and moisture were kept under complete control. As a matter of fact, the mystery reached a new height as the work went along, for Collins finally found a very pronounced stimulating effect by covering a little greenhouse flat of soil with paper for a few weeks and then removing the mulch paper when seed was planted. Dr. Lewis Flint, of the Collins staff, later encountered an accidental field experiment that checked these novel greenhouse results: A Florida truck grower making his first trials with mulch paper, spread his rolls of paper several weeks before planting time. But he did not fasten the paper down very securely, and a violent storm came along and blew it all away. The truck crop planted where the paper had been, however, showed a strange stimulated effect throughout the season.

Maybe some day we will understand how mulching effects this striking stimulation of plant growth. Maybe a new principle in plant physiology lies hidden here.

LAWNCRAFTS 18"
Hand Operated
SICKLE MOWER

Practical
Efficient
Adjustable
Flexible

Always ready for service
Nothing to get out of order
Keeps your yard free of weeds and dandelions
Eliminates Grass-whips, Scythes, Sickles and Shears

For Cutting High, Tough Grass, Weeds, Dandelions, Crab Grass, Buck Plantain and Water Grass
For Trimming around Shrubbery, Trees, Hedges and Flower Beds
For Trimming Edges of Walks and Driveways
For Cutting Along Sides of Buildings, Walls and Fences
Small Investment for Years of Service

Only . . . $39.95 Freight Prepaid
Check or Money Order With Order!
Dealers inquiries invited
HOFFMAN LAWN SUPPLY
P. O. Box 153 Hoffman, Illinois

SUPER - COMPOST Has Gone Over Big !

21 months without a complaint. It is something really good to dig into your soil. No waiting for results—it acts at once. Too, it is complete. Nothing else needed. It feeds your plants, and renews your soil. It is a proven product.

Write for literature.

KNAPP & KNAPP
988 Lewelling Boulevard
San Lorenzo, California

COMPOST AS YOU WANT IT

- SCREENED
- SHREDDED
- GROUND
- MIXED
- PILED

Rocks, trash separated.
Grinds manure and tough organic matter through rolling screens, wet or dry. Screens fine as wanted through perforated screens. Free compost circular.
W-W GRINDER CORP Dept. B WICHITA, KANSAS

Floral Arrangement for August

ANN ANDREWS

Boutrelle

Boutrelle—New York Flower Show

THE month of August is a last month of vacation, and we want to enjoy the outdoors to the utmost, as drinking the vintage to the last drop.

An outdoor meal with pottery dishes, mats for place settings, and colorful glasses make a meal seem cool and pleasant. A cool-looking arrangement of green sempervivum, with dried material and accessories, is in keeping with surroundings. Rustproof furniture is both practical and beautiful.

This is a photograph of a setting by Mrs. A. O. Samuels at the New York Flower Show.

The composition by Mrs. W. Killmer, a combination of gladiolus and fruit, has texture and is beautifully alive. It is prevailing tropical, having cocoanuts, bananas, oranges, foliage, gladiolus, and the northern Osage orange which produces orange-like fruit and is commonly used as a hedge in Pennsylvania.

Liquid in New Organic Method

Q. I am following the Selby method of composting the manure from my cows and am also applying the sheet composting procedure on my land. I have been told to pour the liquid draining off the Selby pit back over the material at the top of this pit. Would it not be better to sprinkle this liquid on my sheet compost to speed up decomposition?

A. It would be best to use the liquid drainings on the sheet composted materials. If used in the Selby pit or silo it might create oversaturated condition which we must guard against.

New Organic Method for Pastures

Q. What is the best method of applying the new organic method to permanent pasture land? Would it be best to shred the green matter and apply it as a mulch around the pasture plants? How about manure? Could it be passed through a shredder with the green matter, thus mixing the two materials together?

A. The green matter should be shredded and broadcast over the pasture lightly so that it does not suffocate any plants. The idea of mixing green matter with manure in some kind of shredder is a good one.

Corn Smut

Q. What is the cause of smut in corn, and how can it be controlled?

Mrs. F. R. M.,
Williamsville, N. Y.

A. Corn smut is a disease caused by a fungus which lives parasitically inside the corn plant. After this fungus makes a local growth, it causes plant parts as individual kernels of corn, the whole ear, parts of

WHICH DO YOU WANT?

Normal Elimination Better Digestion Restful Sleep
Strong Healthy Teeth Continued Good Eyesight
THEN STOP THROWING AWAY PRECIOUS VITAMINS AND MINERALS IN YOUR FOOD

MAKE MEALS WITH A VITA MIX
Drink Your Way to Health!

$29.95

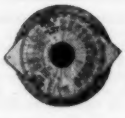
minutes, chops vegetable salads in 5 seconds. In preparing food the ordinary way, you peel off and throw away those vitamins and mineral-filled parts which are so essential to good health. With the Vita-Mix you keep ALL the natural health-giving food value. That's why you can literally drink your way to health with the Vita Mix. Completely liquefies, whips, chops, emulsifies all fruits and vegetables into tangy, appetizing drinks. Leaves no pulp. No cooking, juicing or peeling of rinds necessary. Now has new unbreakable stainless steel bowl. Easy to sterilize.

Look what VITA MIX does

Makes health drinks in 1 to 4 minutes, makes soup without boiling in 3 minutes, makes cake batter ready for oven in 3 minutes, chops whole grain into flour or cereal in 1 to 4

WHEEL-O-LIFE

Why should any family buy food before they know what that food can do to help build good eyes, teeth, digestion and nerves. What you eat today walks, talks, and squawks tomorrow. You need a Wheel-O-Life to tell you the vitamin, mineral, and calory content of over 160 foods. Feed your family scientifically. Don't wait till you get sick to get on the right diet. The Wheel-O-Life belongs in every home where health is important.



1 YEAR SUBSCRIPTION
DIET DIGEST

Gayelord Hauser gives you facts about importance of diet to good health. Fascinating articles of all types.

GET THESE GIFTS
IF YOU ORDER NOW!

Natural Foods Institute
Dept. OG-8
Olmsted Falls, Ohio

I want to drink my way to health. Rush me your Vita Mix worth $39.95 plus your two free gifts, an electric grill and toaster worth $9.95 and the Recipe Book worth 55c. I enclose $29.95, a saving of $20.50.

NAME .....
ADDRESS .....
CITY ..... STATE .....

COMPOST THIS FALL WITH
B.C.A.

When you make your compost pile this fall, don't overlook B.C.A. (Bacterial Compost Activator). A sprinkling of B.C.A. on each layer will insure well matured compost next spring.

B.C.A. may also be used in the new Sheet Mulch Method—directly on house plants—to eliminate obnoxious odors—to promote earthworm cultures.

Simply fill out the coupon below and send for your B.C.A. today. Delivery by return mail.

B.C.A. contains a multitude of beneficial bacteria, rock phosphate, trace elements, and other plant nutrients.

ALL ORGANIC

NO ARTIFICIALS

ORGANIC PRODUCTS, Dept. G-8
236 Halsey St., Newark, N. J.

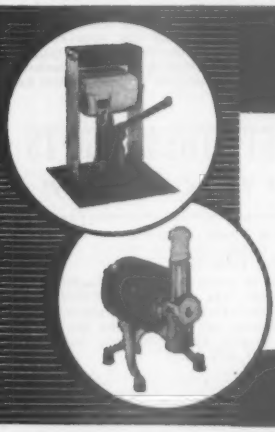
Enclosed please find check or money order, please send
5 lb. can, $2.00 Pp'd—FOR APPROX. 2 tons Compost ($2.50 West of Miss.) or average garden
15 lb. can, $5.00 Pp'd—FOR APPROX. 6 tons Compost ($5.00 West of Miss.) or large garden

Name .....
Address .....
City .....

SPROUT SEEDS IN THE
SproutMaster
PATENT APPLIED FOR
Produce your own VITAMINS in only 3 to 5 days

The SPROUTMASTER efficiently handles grain, alfalfa and other small seeds. Get acquainted with this new unique method for producing tasty, vitamin-rich foods in this clean and simple way. Produces large amounts of vitamins C and B Complex! The SPROUTMASTER comes complete with seed samples and instruction booklet. Recipes too. An excellent gift item.
Further information on request
Sold by the best Health Food Stores or order direct.
Prices:—Large size, $4.75 east of the Rockies and $4.25 west of the Rockies. Economy size, $3.50 east and $3.00 west.
(In California add 3% Sales Tax)
Western Nutrition Laboratories 6 Orange St., Redlands, Calif.

GET MORE JUICE!
GET FINER SHREDDING!
...and Save Money!



● Regardless of your needs, K & K Juicer functions economically and swiftly, to give you as much as 20% more juice than you've ever gotten before! Simply because of the 3000 lbs. pressure delivered by K & K's easy-to-use hydraulic system. And, what's important, because of the method of extracting juice, the K & K Juicer doesn't destroy the enzymes, so important for aiding digestion.
● The K & K Shredder is a wonderful companion with its quick and efficient shredding of fruits and vegetables for soups, salads and desserts.
● Both economically priced, they return their value in more juice and finer shredding . . . paying off in more and better food!
Address inquiries to: Dept. G
KNUTH ENGINEERING COMPANY
2617 N. ST. LOUIS AVE., CHICAGO 47, ILLINOIS

ORGANIC FOOD DIRECTORY

ORGANIC GARDENING *invites all who have organically grown foods for sale to list them in the* Organic Gardening Directory. *There is no charge for listing your name, address, and organically grown produce in this directory. Write us, telling in detail what you have that is organically grown, mentioning how long and in what manner you have applied the method. We will register those who have a place where people could stay over-night and get organically produced food. Write to*

Organic Food Division
ORGANIC GARDENING, Emmaus, Pa.

Organic Gardening now has its own
BOOK OF THE MONTH
See outside back cover of this issue for details on how
YOU CAN SAVE 20% ON CLOTHBOUND BOOKS!

5 HARDY PHLOX $1
FIVE DIFFERENT COLORS
Guaranteed to bloom next summer
A real bargain! Each a named variety—all labelled. Will produce beautiful blooms June thru August. Excellent for garden or borders. FREE fall catalog. For full description of our complete line of quality nursery stock. Send for your copy today.
Ackerman Nurseries, 720 Lake St., Bridgman, Michigan

IRIS Reduced Prices
Day Lilies — Poppies
Write for free catalog or visit
WITTMAN'S IRIS GARDENS
1447 Van Houten Ave. (Off Route 6) Clifton, N. J.

the tassel to become abnormally large and ultimately these enlarged structures become filled with fungus spores which are dark brown in color. Sometimes smut "boils" appear in other parts of the plant. The spores are scattered when the smut boils burst and infect other corn plants. Corn smut can be controlled fairly well by removing all diseased plants just as soon as they can be detected.

Fruits and Spraying

Q. I have my doubts about the possibility of growing satisfactory fruit (apple) without spraying or dusting. But is anyone growing clean fruit without spraying?

A. C., Ridgewood, N. J.

A. There should be relatively little difficulty in growing clean apples without spraying or dusting, if and when the soil is sufficiently rich in humus and all the essential elements. My father grew such apples as Northern Spy, Baldwin, Greenings, and others without dusting or spraying, and with few exceptions, all apples were perfect and salable. Apples lose their resistance to insects and diseases when one or more of the essential nutrient elements are leached out of the soil or are otherwise made unavailable.

Until such time as the soil can be restored to conditions optimum for the apples you are growing, it may be necessary to practice some control if you wish to get clean fruit. I have a Wealthy, two Jonathan, two Stark's Delicious, and one Black Twig apple trees in my garden. This year I pruned them carefully to make sure of good aeration and proper illumination. Then in the spring just before the buds opened I had them sprayed with a 3 per cent oil spray to kill scale insects and insect eggs that happened to be on the trunks, branches, and twigs. Just as practically all the petals had fallen, a regular lime-sulphur-arsenic spray was applied to control the codling moth. No further sprays

(*Continued on page* 60)

Chemical Fertilizer Bill Passed

(*Continued from page 36*)

sary, to employ upon a temporary basis such technical, clerical, and other assistants as it deems advisable, to utilize the services, information, facilities, and personnel of all agencies in the executive branch of the Government."

Then I wish to call special attention to the last sentence in the resolution, which reads:

Subpenas may be issued under the signature of the chairman of the committee or any member of the committee designated by him, and may be served by any person designated by such chairman or member.

Mr. MILLER of Nebraska. Mr. Speaker, I am in favor of this type of resolution. There is an old saying, "Tell me what you eat, and I will tell you what you are." I am certain what we eat is important. There is nothing that people are more interested in than food. It is the first thing most of us want after our first breath of air.

I became interested in the use of sprays, fertilizers and chemicals about 10 years ago when they first came in general use.

Much research has been carried on in finding new uses for chemicals in food. I sometimes feel that the Agricultural Department works overtime in trying to find substitutes for nature's food.

When I was State Director of Health in Nebraska, we made some special studies on the use of chemicals in food. Since that time I have been interested in reading some of the work that has been printed by scientists and the amount of experimental work upon the use of chemicals in food. This resolution goes further. It goes to the use of sprays and insecticides and fertilizers as used upon the land on which they are trying to raise more and more crops.

Recently there have been some scientific papers printed which show that certain chemicals in food and minerals in fertilizers and sprays, seem to have a tendency to produce some vascular diseases, kidney diseases, and diseases of the nervous system.

Some experts in animal disease seem to feel that the virus X disease which has been found in cattle, and which was found last year in Nebraska, might come from the use of certain sprays and fertilizers used on the plants which they fed to the animals. This is a very broad resolution. I think it is very necessary because of the use of chemicals substituting animal and vegetable fats in food. As the gentleman from New York reports, there were two bakery companies that used some 10,000,000 pounds of chemicals in bread last year. The Department of Agriculture tells us that if we used 3 per cent more wheat in our bread there would be no surplus of wheat today. As I look at the resolution, it goes not only to the chemicals in food, which are several hundred, but it goes to the use of fertilizers used in raising the food. It goes to the use of sprays and insecticides used upon plants to kill certain insects and pests.

It is a good resolution. It is a long continuing one. It is one that cannot be finished in a year's time. It should be a continuing study. There are more and more scientific men printing papers and scientific reports showing that certain diseases in human beings have been increased, not only by the use of chemicals in food but by sprays and fertilizers that are being used.

Mr. SMITH of Virginia. Mr. Speaker, will the gentleman yield?

Mr. MILLER of Nebraska. I yield.

Mr. SMITH of Virginia. I have been disturbed not only by the things mentioned by the gentleman from Nebraska but particularly by these sprays used in agricultural areas. They use a spray called DDT in connection with the Japanese beetles. I am worried for fear it might affect or destroy the bees, because the bees are responsible for the fertilizing of our fruits and plants. If we destroy the bees we might destroy human life.

Mr. MILLER of Nebraska. That is correct. Certain human diseases are being increased perhaps because of these mysterious elements.

Mr. SMITH of Virginia. I hope they go deeply into that matter of sprays.

Mr. HUBER. Mr. Speaker, will the gentleman yield?

Mr. MILLER of Nebraska. I yield.

Mr. HUBER. Why would it not be appropriate for the subcommittee of the Committee on Agriculture to study this matter, rather than to set up a special committee?

Mr. MILLER of Nebraska. I have no objection, but I think the Committee on Agriculture probably is quite busy on problems particularly affecting agriculture. This goes further. It goes into the public health. It goes into chemicals used in foods, into sprays used, and insecticides, and it goes into the use of fertilizers —what happens to food when we use certain fertilizers and sprays. It is a broad question in which the country is vitally interested.

The SPEAKER. The time of the gentleman from Nebraska [Mr. MILLER] has expired.

Mr. HERTER. Mr. Speaker, I yield one minute to the gentleman from California [Mr. PHILLIPS].

Mr. PHILLIPS of California. Mr. Speaker, I rise in support of the resolution. I am glad that a previous speaker paid tribute to the work done upon this subject by the gentleman from Wisconsin [Mr. KEEFE], who is unfortunately unable to be here today. Nothing would please him more than the passage of this resolution. It would be a recognition of his own interest and work over the years. As I say, I support the resolution. I am very glad it has been brought up and I hope it will pass unanimously.

(Mr. PHILLIPS of California asked and was given permission to revise and extend his remarks.)

Mr. HERTER. Mr. Speaker, I

GARDENERS'
FIRST CHOICE !
3 H. P. 12" Model
ONLY $236
F.O.B. Milwaukee

- Tills, Mulches, Cultivates!
- 9 "Plug-in" Attachments for Spraying, Mowing, Hilling, Seeding, Bulldozing, Snowplowing, other work!
- Also 16"—26" tillers and power take-off models!
- Write Dept. OG-8 for folder and detailed information.

MILWAUKEE EQUIPMENT
ME ROTARY TILLERS
SOUTH MILWAUKEE WISCONSIN
Patented
© 1950 MILWAUKEE EQUIPMENT MFG. CO.

SUNFLOWER SEEDS
"a real favorite at cocktail time"

NIBBLE FOR PLEASURE
and grow healthy!
Jumbo SHELLED SUNFLOWER SEEDS! Once you start to eat them you can't stop. Keep a bowl full in the living room. The wonderful part of it is, they are not only good THEY'RE GOOD FOR YOU. People who eat them daily feel better for it. The SUNFLOWER follows the sun all day long and are rich in Vitamins A-B-D sought after by the American people.
Sunflower Seed
HULLED
2 lbs. $2.50 4 lbs. $4.75
The Great Valley Mills
RFD 7 IVYLAND (BUCKS COUNTY) PENNA.

How To Have a BETTER LAWN AT LOWER COST
If you want a "show place" lawn, write us today for your FREE copy of "How To Have a Better Lawn at Lower Cost."
Early Autumn is the ideal time to improve your lawn or build a new one. But first, get the facts by writing now for helpful information. A post card will do.
DRUMCLIFF CO., Dept. 105, Towson 4, Md.

Ruhm Phosphate Rock
It's The Finest Phosphate Made. Best By Every Test. It's by far the most finely ground (85% through 300 mesh screen), and "It's' It's Fineness That Does It." 80 lb. bag $2.25—Ton $32.80 both prices freight collect from Townsend, Mass. Carload prices on request. Farmer agencies Available. Write Mr. Daly
SOILSERVICE, Townsend, Mass.

ROOT YOUR OWN CUTTINGS IN VERMICULITE OR SAND
Improved and revised illustrated Scientific Copyrighted Instructions $1.00. It is amazing how quickly you can root cuttings of Roses, Gardenias, Camellias, Azaleas, all evergreens, etc. with our simple instructions. This information cost us Thousands of dollars and years of experience and costs you only $1.00.
NATIONAL NURSERIES, Dept. 22, Biloxi, Miss.
Free catalog on Camellias, Azaleas, Gardenias.

Chemical Fertilizer Bill Passed

(*Continued*)

yield such time to the gentlewoman from Ohio [Mrs. BOLTON] as she may desire.

Mrs. BOLTON of Ohio. Mr. Speaker, I sincerely hope this legislation will be passed. There is so much that is not known about the values in food today, the poisons that may be in them, and just the sheer lack of vital essences. I hope exceedingly there will be no question about the passage of this resolution.

I join with my colleagues in expressing the thought that this will give our colleague the gentleman from Wisconsin [Mr. KEEFE], the sense of accomplishment in some of the work to which he has given so much energy.

Mr. Speaker, the whole problem of essential values in the food the people of this country buy and eat is one of basic importance to our future. Thirty years of research has shown pretty conclusively that systemic lack of only one needful item, iodine, is directly responsible not only for much of endemic goiter, but also of much feeblemindedness, deafmutism and certain other such crippling physical and mental conditions among our people. Animal research has shown that soil deficiencies influence food values and the results to the animals are bad. It would seem equally possible that the same might be true of humans. In addition there has been no adequate research on such questions as: First, the result of the new methods of food preservation on the value of the food when eaten; second, the actual chemical changes caused by tincans and other containers, and so forth.

This resolution seems to bring the hopes some of us have had closer to fruition.

(Mrs. BOLTON of Ohio asked and was given permission to revise and extend her remarks.)

(Mr. DELANEY asked and was given permission to revise and extend his remarks.)

Mr. DONDERO (at the request of Mr. DELANEY) was given permission to revise and extend his remarks.)

Mr. DELANEY. Mr. Speaker, I move the previous question on the resolution.

The previous question was ordered.

The resolution was agreed to.

Mr. DELANEY. Mr. Speaker, I offer an amendment.

The Clerk read as follows:

Amendment offered by Mr. DELANEY: On page 1, strike out the preamble.

The amendment was agreed to.

Gentlemen:
I MUSTN'T MISS AN ISSUE OF
ORGANIC GARDENING
Put me down for a subscription for
1 Year—$3 ☐ 2 Years—$5 ☐ 3 Years—$6 ☐ 5 Years—$8 ☐
and send me a bill.
Name_____
Address_____
(CUT OUT AND MAIL TO ORGANIC GARDENING, EMMAUS PA.)

Profits in Mistakes

(*Continued from page* 19)

three times. The trouble (if it *was* trouble) cleared up—whether as a result of the dusting or just because the plants were fundamentally healthy, I frankly do not know. However, there is no doubt that compost is rich in antibiotics, so that dusting a fungus disease with it would seem a reasonable procedure. Anyway, if I find similar symptoms on any of my plants next year, I shall try the treatment again. It is very easy to apply—I simply took a handful of the sifted material and dusted it over the leaves.

I believe all this panic-mongering is a waste of energy and a detriment to good gardening. I believe that more often than not (perhaps always) the alleged cure is worse than the disease. In years gone by, when I faithfully followed the instructions of the experts my bitterest disappointment arose from the fact that all the dismal and tiresome business of concocting chemical mixtures and pumping them on to my plants never protected them from disease. I would go through the performance in a mood of despair, always hoping that my tomatoes or delphinium or what-not would escape but with the conviction in my heart that the disease would descend upon them. Invariably it descended.

It was not until I decided that a plant cannot be made healthy from the leaves inwards but only from the root upwards that I began to conquer disease. My belief now is that if everything is right with my soil my plants will be healthy; if anything is wrong with my soil, my plants will never be healthy even though I spray daily from sunrise to sunset.

There is no need for me to convert those who have developed a healthy soil by feeding it compost; they will have found out for themselves how unnecessary fungicides are. To recent recruits in the organic army, however, I would say—do not permit yourselves to be panicked. As long as you continue to "cure" the diseases of your plants with fungicides, you are in a vicious circle. If the fungicides will kill malevolent fungi on your plants, they will, just as certainly, kill benevolent fungi in your soil. This means that you are robbing your plants of their natural protection, creating more sickness to be cured with more fungicide which will kill more benevolent fungi. You must break out of this circle. Give your soil a chance to recover from the sickness you have brought upon it in the past and, for a season or two, let compost show you what it can do. Feed your sickly plants with compost around their roots; sprinkle compost upon their leaves. If they fail to recover their health, you will be no worse off than if you had sprayed them; if they recover, you will have started on a method of gardening which will bring you more joy and satisfaction than you have hitherto known.

Delphiniums in the Garden

(*Continued from page* 23)

plant free to move within the stakes and tie. At this period a good application of compost will benefit the plants considerably, sprinkling it on the ground and then covering it with a mulch of shredded plant materials. The mulch should be thin on heavy soils and correspondingly thicker on lighter soils.

If the first spikes are cut out as soon as they have finished blooming, secondary spikes will develop which will bloom for two or three weeks after the main spike.

Winter Care of Delphiniums

It is well to give delphiniums some winter protection, but be sure to use some loose material like straw, excelsior, or similar material. Before winter mulching, all dead foliage and the supporting stakes should be removed and the flowering spikes cut down to within a foot of the ground. From now on, the plants will develop their crown buds (eyes) for the following year's growth, and it is therefore necessary to protect them against slugs. To do this, remove some of the soil from around the crown of the plant and cover it with a liberal dressing of sharp ashes (cinders). This will protect them so that nothing more need be done until Spring. Do not apply the winter mulch until the ground is hard-frozen, and remove it in early Spring before growth begins.

Leading Strains and Hybrids

Most of the leading strains offered today are selections of English growers which form the basis of the work on delphiniums being done in America. The most significant work is now being done by American specialists on the Pacific Coast. Their object is to give to American gardeners delphiniums with a wiry stem to withstand winds and such constitutional vigor that they can resist the onslaughts of diseases and insects. The height of plant seems to have been somewhat overdone. More desirable is a plant of lesser height, but with greater stability.

Now available are delphiniums for various purposes. If you want a simple pyramidal spike for garden accent, use the Pudor strain. If you want delphiniums that will show a strong development of lateral branchlets having an abundance of short-stemmed flowers for cutting, plant the Barber varieties. If plants of lesser stature, but with more wiry stems, are desired, choose the Vanderbilt hybrids. All these are Pacific Coast delphiniums.

The Wrexem delphinium is one of the very best English strains, and is best raised from imported seeds. The spike is more spire-like than columnar and is very beautiful. They often are called hollyhock delphiniums.

You Will Want to Read These

ORGANIC GARDENING LIBRARY BOOKLETS

on Flowers, Lawns, and Ornamental Plants

3. **BULBS AND HOUSE PLANTS** by Cecile Hulse Matschat. Discusses tulips, iris, lilies, peonies, etc. 60c
4. **ANNUALS AND PERENNIALS** by Cecile Hulse Matschat. Describes the advantages of annuals over perennials and vice versa. . 60c
5. **HOUSE AND GREENHOUSE GARDENING** by Fred McCready. Deals with inexpensive means for growing plants in your house and under glass in hot-beds and greenhouses. $1.00
6. **GARDENING WITH THE EXPERTS.** An encyclopedia on all phases of gardening. . $1.00
15. **SHRUBS AND TREES** by Cecile Hulse Matschat. Landscape design, borders and backgrounds, street trees, flowering trees, fruit trees, evergreens, etc. 60c
16. **HOW TO MAKE A GARDEN** by Cecile Hulse Matschat. Here are all the facts and underlying principles to make any garden a success. Illustrated. 65c
17. **PLANNING THE HOME GROUNDS** by Cecile Hulse Matschat. Whether you buy or build... remodel or start from the ground up, this book will help you develop a beautiful setting for your home. 65c
18. **HOUSE PLANTS—How to Grow Them** by P. T. Barnes. A complete guide for growing healthy, vigorous plants in the house. . 50c
20. **WILD GARDENS OF NEW ENGLAND** by Walter Prichard Eaton. How to reproduce the natural settings of lovely, wild flowers in your garden. $1.00
35. **FLOWERS FOR EVERYONE** by Heinrich Meyer. Facts about common plants of the garden. 40c
36. **THE GARDEN NOTEBOOK** by Alfred Putz and J. W. Johnson. Proper methods and practices for all types of gardening. . $1.25
37. **THE GLADIOLUS BOOK** by William M. Ioki. All about the gladiolus and its culture. $1.00
39. **THE FLOWER CALENDAR** by Dr. William H. Eyster. This calendar tells what to plant and when to do it. Assures a blooming, beautiful garden all year. $1.00

SEE SPECIAL OFFER ON PAGE 62

Postage prepaid when cash accompanies order.

ORGANIC GARDENING, Dept. 8G, Emmaus, Pa.

More Important Than Ever:

Binders

for your valuable copies of Organic Gardening

All the news, features, editorials, to which you look forward every month can be preserved in these handy, durable, attractive leatherette binders—instantly ready for you to consult. A file of *Organic Gardening* is a permanent encyclopedia of organiculture, health, and inspiration.

New-size binders: $1.50.
Binders for Organic Gardening Library booklets: $1.25.

Each binder holds 12 copies—easily inserted and removed. Stamped in gold on front and backbone. *Be sure to specify which binder you want!*

Postage prepaid when cash accompanies order.

ORGANIC GARDENING, Dept. 8G, Emmaus, Pa.

Seminar on Phosphate

(*Continued from page 41*)

The stolons are shorter than normal, and the roots and tubers are poorly developed.

Young corn plants become dark green followed by purplish coloration. Defective ears are produced showing irregular rows of unfertilized seed rudiments.

Fruit trees. Young and nearly matured leaves become dark green, while mature leaves are bronzed or ochre—dark green. Old leaves are usually mottled with light-green areas developing between dark-green veins. Stems and leafstalks develop abnormal amounts of purplish pigment, especially during cool summer weather. As the deficiency continues, new twigs are slender and leaves small (apple) or strap shaped (peach).

Small grains. The interpretation of this deficiency is difficult in small grains because there are no outstanding specific external symptoms that point directly to phosphorus hunger. Slow growth and lack of stooling are the common signs, particularly when the plants are dark green and appear healthy otherwise. The leaves of barley and wheat sometimes show slight purple coloration, while severe starvation in wheat may cause the tips of the older leayes to die back toward the base.

Reader's Correspondence

(*Continued from page 56*)

or dusts were used. In other words, no spray was used when apples were forming, or thereafter, so that the apples had no spray residues. To my surprise and delight, approximately 90 per cent of the fruits were clean enough to be considered salable. Most of the 10 per cent of unclean apples were on the north side of the trees and adjacent to other apple trees which were neither pruned nor sprayed.

Interested in learning to

WRITE?

Let these three books start you off on the right path . . .

The Word Finder
by J. I. RODALE

Speedily builds bare thoughts into expressive sentences. *Much more useful than a thesaurus!* 1350 double column pages, thumb-indexed. **$6.50**

The Word Bank
by S. BASESCU

A new type of synonym book. Quickly helps you find the *right* word. Invaluable for building your vocabulary. 216 pages. **$3.00**

Short Story Writing
by F. ORLIN TREMAINE

Step-by-step guidance by popular editor and author. Includes complete short story with analysis. Adopted by U. of Vermont. 240 pages **$3.50**

Postage prepaid when cash accompanies order.
RODALE PRESS, Dept. 8-G, Emmaus, Pa.

You Should Own These Vital Publications for Organic Gardeners:

An Agricultural Testament

by Sir Albert Howard, C.I.E.

The basic work which established the principles underlying the organic method. Louis Bromfield has said it is "the best book I know on the soil and the processes that take part in it." Used as a text-book, it will safely and surely bridge the gap for the novice between the use of harmful chemical fertilizers and organic methods, utilizing Nature's own laws. 253 pp. **$3.50.**

Bio-Dynamic Farming & Gardening

by Dr. Ehrenfried Pfeiffer

A revelation in the vital biodynamic principles. The author calls attention to the more simple and natural methods of tilling the soil, planting, and harvesting. Comments are made on forestry, gardening, the dynamic activities of plant life, the relation of fertile soil to health, and results of biodynamic methods of farming based upon the return of all plant and animal residues to the soil. *A work of genius.* Paper, 240 pp., 18 illus. **$1.75.**

Postage prepaid when cash accompanies order.

ORGANIC GARDENING, Dept. 8G, Emmaus, Pa.

Gourd Gardening

(*Continued from page* 43)

basket and the lining fastened with two strands of embroidery thread in contrasting colors. The top of the lining is folded down about two inches toward the inside of the basket for a neat finish.

The fruit bowl is filled with winterized "fruit," but real fruit or nuts may be used in these gourd bowls.

These are only a *few* items that can be worked up with your own gourd harvest, but they are all bright, attractive, usable and also salable.

Garden Calendar

(*Continued from page* 45)

growth. Water your shade gardens made up of azaleas, rhododendrons, camellias, and their companion plants and mulch afterwards. It is dangerous to neglect them at this critical bud-forming season. Use an overhead sprinkler to cool the air and keep the foliage from burning. Mulch thoroughly with leafmold, compost and Georgia peat. Now is a good time to visit the nurseries to select new stock. Choose hardy and drought-resistant plants.

The Vegetable Garden:—Crops come on very rapidly at this season of the year; so keep up your succession crops of corn, bush and pole beans, cucumbers, the various summer squashes. Give your lettuce partial shade during the hot weather, Bibb, Oak Leaf and Slobolt are the best for home gardens. Fordhook chard, green and red tampala afford abundance of greens. Gauge your plantings by the size of your family so as to avoid waste. The annual herbs are quick growers at this season of the year, too. Remove suckers from your staked tomatoes and train your Syrian cucumbers to a trellis. Make planting in your seedbeds immediately for your early September planting of winter vegetables: cabbage, kale, kohlrabi, cauliflower, broccoli and onions. Silver Wax Bermuda will furnish your earliest maturing onion. Stockton Red is excellent and Riverside Sweet and White Portugal are good home garden varieties. The green Savoy Cabbage has the most vitamins. Prepare the ground for the September plantings by spading in compost and well-rotted manure. Let your sprinkler run to get two acre inches in the ground before planting. Trim up and fertilize your artichokes if you want an early crop. Keep your compost bin busy. Hasten the work with Humisite.

You will enjoy reading
SELECTED SHORT STORIES OF
Thomas Hardy

HARDY was a master of plot and character. This brilliant group of timeless stories, selected by J. I. Rodale for the famous STORY CLASSICS, is illustrated with 10 beautiful full-page drawings. It is a handsomely printed and bound volume, an asset to your library. Cloth, 192 pp. List price $2.75.

Special price to* Organic Gardening *subscribers, $1.00

Postage prepaid when cash accompanies order.
Rodale Press, Dept. 8G, Emmaus, Pa.

ORGANIC GARDENING LIBRARY BOOKLETS
on* HEALTHFUL *Living

13. **SUNFLOWER SEED—THE MIRACLE FOOD** by J. I. Rodale. Treatise on how to grow, how to eat this vitamin-rich food. . . . **50c**
31. **SLEEP AND RHEUMATISM** by J. I. Rodale. Explains simple rules for avoiding stubborn conditions of neuritis caused by pressures exerted during sleep. **35c**
32. **NATURAL BREAD** edited by J. I. Rodale. Discusses health-giving values of breads and cereals made with organically-produced stone-ground grains. **35c**

See special offer on page 62

Postage prepaid when cash accompanies order.
ORGANIC GARDENING, Dept. 8G, Emmaus, Pa.

And subscribe **now** to **PREVENTION** Magazine, $3 annually. See advt. in this issue.

These Are the Indispensable
ORGANIC GARDENING LIBRARY BOOKLETS
on the Organic Method

1. **THE DOCTORS' ATTITUDE TOWARD FERTILIZERS.** What they think of the organic method. Contains a transcript from a U. S. Senate Hearing. **60c**
2. **MANUAL OF ORGANIC MATERIALS. A Comprehensive List of Compostible Materials Occurring In the Home and in Industry.** This book alphabetically lists 85 substances that may be used to keep the soil fertile in Nature's way. It defines the composition of each material and what each substance contributes in plant nutrients to the soil. . . . **50c**
7. **THE WAR IN THE SOIL** by Sir Albert Howard, C.I.E., M.A. A magnificent summary of the organic cause for those who desire to change to home-made organic fertilizer. **80c**
22. **QUICK-RETURN METHOD OF COMPOST-MAKING** by Maye E. Bruce. New ideas for producing compost WITH OR WITHOUT animal manure. **$1.00**
29. **QUESTIONS AND ANSWERS ON COMPOST** edited by J. I. Rodale and Heinrich Meyer. A guide for compost-making. . . . **35c**
30. **COMPOST—HOW TO MAKE IT** edited by J. I. Rodale. The only book of its kind ever published. **35c**
33. **DEBATES IN HOUSE OF LORDS.** Deals with the advisability of forming a Royal Commission to check on the Sir Albert Howard method of farming. **45c**
41. **THE ORGANIC METHOD ON THE FARM** by J. I. Rodale. Large-scale composting; odorless, laborless chicken-house; field crops and orchards. Describes new organic method. **$1.00**

All About the Earthworm

25. **THE FORMATION OF VEGETABLE MOLD THROUGH THE ACTION OF WORMS** by Charles Darwin. Contains the most important parts of his classic on the earthworm, with other articles. **60c**
26. **OUR FRIEND THE EARTHWORM** by George S. Oliver. Deals with the importance of the earthworm to gardening. Truly a friend to man. **$1.00**

EARTHWORMS—THEIR INTENSIVE PROPAGATION by Thomas J. Barrett, well-known authority on earthworm breeding. Tells how to propagate earthworms—their help in building fine, fertile topsoil. (Not included in special offer.) **$1.00**

SEE SPECIAL OFFER ON PAGE 62

Postage prepaid when cash accompanies order.
ORGANIC GARDENING, Dept. 8G, Emmaus, Pa.

Friends of ORGANIC GARDENING Can Help Build Circulation by Handing Out Free Subscription Booklets

Organic Gardening is constantly striving to increase its subscription list. It is important that we tell as many people as possible about organic gardening. Perhaps you would like to take an active part in this important program by handing out our subscription booklets to friends, neighbors, and acquaintances in your community. *If you would like some extra money, this spare-time activity will return liberal commissions!* The booklet will induce your prospect to subscribe. Through a coded coupon we can trace each subscription to your efforts.

SEND FOR FREE BOOKLETS Write to Organic Gardening, Dept. Q., Emmaus, Pa. We will be glad to send you 25 or 50 booklets. State how many you want.

Don't Be Without These

ORGANIC GARDENING LIBRARY BOOKLETS

on Vegetables, Berries, Herbs

8. **SEEDLINGS** by Evelyn Speiden. How to start seedlings—how to prepare the garden. **$1.00**

9. **VEST-POCKET VEGETABLE GUIDE** by Roger W. Smith. How to grow 40 vegetables the organic way—for medium northern climate. **25c**

10. **COMPLETE MODERN GARDEN HERBAL** by Robert O. Barlow. Numerous facts about herb gardening and usage in several lands. **$1.00**

21. **GARDENING FOR PROFIT** by Peter Henderson. Originally published in 1874. Reveals many profitable secrets for present-day gardeners. **$1.00**

40. **THE VEGETABLE CALENDAR** by Dr. William H. Eyster. Climate maps and extensive tables enhance the value of this month-by-month chart of sowing and harvesting. . **$1.00**

8. **THE BERRY BOOK** by M. B. Cummings, Ph.D. If you grow, or intend to grow, berries, this book is worthy of your attention. . **80c**

on Trees

11. **THE FRUIT ORCHARD** edited by J. I. Rodale. Practical hints, unusual data on fruit growing. **65c**

19. **TEN TRUSTWORTHY TROPICAL TREES** by John C. Gifford. A delightful book. Includes the lime, coconut, guava, avocado and mango. **$1.00**

23. **TREE CROPS** by J. Russell Smith. An inspiring book on trees yielding crops as animal food. **75c**

on Vital Garden Topics

12. **LEAVES AND WHAT THEY DO** by Heinrich Meyer. For very gardener and plant lover. **45c**

14. **WEEDS AND WHAT THEY TELL** by Ehrenfried Pfeiffer. Discusses hundreds of weeds common to farm, orchard and garden. **$1.00**

24. **EDIBLE PLANTS OF THE POND AND WATER GARDEN** by C. L. Wittrock. A wonderful instructor for the nature-lover and fisherman. **50c**

27. **ANIMALS AND THE GARDENER** by Richard Headstrom. Animals and insects that are friends and foes to the garden. . **35c**

28. **LUTHER BURBANK** by Roger W. Smith. Interesting reading about plant breeding and the important contributions of this great horticultural pioneer. **35c**

SEE SPECIAL OFFER ON THIS PAGE

Postage prepaid when cash accompanies order.

ORGANIC GARDENING, Dept. 8G, Emmaus, P

Build Your Organic Gardening

library with back copies. All 1948-50 issues available (except May and Dec. '48; Jan., April, and May '49). 25c ea.

ORGANIC GARDENING, Emmaus, Pa.

Special Offers

(Open only to subscribers to Organic Gardening)

Cold-stamped binders, which have a capacity for twelve Organic Gardening Library Booklets, are available at $1.25 each. We offer:

A FREE BINDER with every order for $10 worth of the numbered booklets advertised in this issue.

THE ENTIRE SERIES of 40 numbered booklets mounted in three binders, value $31.80: **ONLY $25.**

Postage prepaid when cash accompanies order.

ORGANIC GARDENING, Dept. 8G, Emmaus, Pa.

WHY should an organic gardener read

The Organic Farmer ?

BECAUSE The Organic Farmer can discuss in much greater detail the commercial aspects of orcharding and truck farming . . .

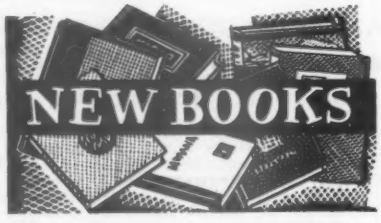
BECAUSE the principles of organic farming are applicable on a smaller scale to gardening . . .

BECAUSE The Organic Farmer will give you more angles on the new organic method, soil management, cover crops, and sheet composting. It's edited by J. I. Rodale.

To get the complete picture, read BOTH organic magazines. Don't miss an issue of The Organic Farmer: Send in your subscription today; either enclose payment or ask us to bill you.

One Year $3 Two Years $5 Three Years $6

Write today! **THE ORGANIC FARMER, Dept. 8G, Emmaus, Pa.**



THE HIVE AND THE HONEY BEE, by Roy A. Grout and a staff of specialists. (Dadant & Sons, Publishers, Hamilton, Illinois, 1949, $4.00)

This book is a complete handbook for the beekeeper. The first chapter is an excellent orientation in the beekeeping industry. A full treatment is given of races of bees, the honeybee colony, activities of the bees, the honeycomb, beekeeping equipment, management practices, procedures in commercial honey production, winter care of the colonies, the bee as a pollinator, and the poisoning and diseases of bees. Cloth bound, well illustrated, 652 pages.

PRACTICAL NUT GROWING — Beauty plus Utility, by Gilbert L. Smith (Benton and Smith Nut Tree Nursery, Wassaic, New York, 1949, $1.50)

This booklet, written by a nurseryman, gives much practical information on the planting and care of nut trees. As the population of this country and the world increases, it becomes increasingly important to utilize such dual purpose plants as nut trees, which serve equally well as shade trees around the home and food producers. The selection of the proper species and the care in growing these trees is important. This book is of special value to the beginner because it deals with the fundamentals of the proper selection of species, hardiness, advantages of grafting, where and how to plant, watering, pruning, spraying and fertilizing. Other problems often encountered such as rodent control and proper pollination are also discussed in a simple manner, understandable to the beginner. Paper bound, 60 pages.

CLASSIFIED *ads*

Rates are 21c a word. Minimum 25 words, or $5.25. Payable in advance. Include name and address in word count. (Deduct 15% from total rates, for Help or Positions Wanted ads.)

FLOWERS

DELPHINIUM, Pac. Giant, Prizewinner, also imported seed of finest Primroses. Columbines, Swiss Giant Pansies. Free Folder. **OFFERMAN DELPHINIUM GARDENS, 4709 W. STEVENS, Seattle 6, Wash.**

BEAUTIFUL IRIS, assorted colors $2. a doz. Free list of named varieties. Also new hemerocallis, double and reds $1. a division. **FARMERS GARDENS, Hugo, Oklahoma.**

IRIS—6 choice—different—$1.00 plus 10c postage. Satisfaction guaranteed. Peonies, Hemerocallis, Perennials, Tulips. All types of Iris. Catalog free. **IMPERIAL IRIS GARDENS, Cornell, Illinois.**

IRIS: Dwarf, Intermediate, Tall Bearded, Fall Bloomers, Siberian. Catalog by request. Wholesale list to Commercial growers only. **IRISDALE GARDENS, 526 W. Bristol St., Elkhart, Ind.**

EASTER LILIES. Write for Prices. Fall delivery. Free information on Forcing and Culture. All Orders Prepaid. **CLINE'S LILY GARDEN, Box 94-B, Langlois, Oregon.**

HARDY ORCHIDS: 2 each Cypripedium spectabile acaule and parviflorum and 2 Habenaria fimbriata $2.50 postpaid. Fall planting best. Catalog free. **ORCHID GARDENS, Grand Rapids, Minnesota.**

PELARGONIUM CUTTINGS—Twelve different, Ten '49, Eight '50 introductions, Eight Scented Leaf or Twelve Ivy Geraniums any lot $2.00 air mail. **Seed**—Martha Washington mixed $1.00—Separate Colors $1.50—Scented Leaf $1.50. **PELARGONIUM FARM, Escondido 2, Calif.**

5,000 AFRICAN VIOLET, 60 outstanding varieties. 75c up. Immediate shipment. Free Catalog. Open daily and Sundays. **TINARI FLORAL GARDENS, Specialists, Hybridizers, Bethayres, Pa. Dept. O.**

WILD FLOWERS for that shady place in your garden. Nice healthy plants. Hepatica, Bloodroot, Ladyslipper, Violets and others, over 50 kinds. Write for price list. **THOMAS M. WOOD, Constantia, New York.**

NURSERY STOCK

BABY EVERGREENS — SEEDLINGS — TRANSPLANTS — SEEDS. Azalea - Rhododendron Hybrids. All Northern-grown. Bulbs. Free Catalog. **GIRARD BROS. NURSERY, Geneva, Ohio.**

GRAPES, fresh, vine-ripened. Finest quality in the South. No chemical fertilizers used. Shipments begin last of July and throughout August. Packed in 2 quart tills, 8 tills to a crate. $5.00 Postpaid. **ROSE CITY NURSERY, Maiden, N. C.**

EVERGREEN Lining-out Stock, Transplants and Seedlings. Growers of large quantities of Pine, Spruce, Canadian Hemlock, Arborvitaes, Fir, in variety. For growing Christmas trees. Ornamentals. Windbreaks. Hedges. Forestry. Prices low as 2c each on quantity orders. Write for price list. **SUNCREST EVERGREEN NURSERIES, Dept. OG. Box 594, Johnstown, Pa.**

BOOKS AND PUBLICATIONS

"HONEY AND YOUR HEALTH" by Bodog F. Beck, M.D. and Dorse Smedley. A book for those who seek the natural foods for health. $3.00 a copy Postpaid. **CLINTON KEAGY, New Castle, Penna.**

"MIRACLES OF MENTAL ACTION." Tremendously important, valuable information. Many uses. Price $1.00. SATISFACTION GUARANTEED. **SCIENTIFIC INFORMATION SERVCE, 2250 Houghton Ave., SE, New York City 61.**

"MAKE YOUR OWN WINE" by Alex Appleyard; from flowers, vegetables, hard and soft friuts and many others. Over a hundred recipes. $1.50 postpaid. **CLINTON KEAGY, New Castle, Penna.**

GARDEN EQUIPMENT

STOP STOOPING! Weed easily. Save whole weekends. Find the real pleasure in gardening. Send for free illustrated circular. **KRAMER COMPANY, Dept. 15, Enumclaw, Washington.**

GARDEN SERVICE

McFARLAND'S Organic Garden Service, Homes & Estates Beautified. Only Art Lovers solicited. **F. E. McFARLAND, 4233 Graceland Ave., Indianapolis, 8, Indiana.**

EARTHWORMS

DR. OLIVER'S Hybrid EARTHWORMS $2.50 per 500 Prepaid. Our aim—Satisfied Customers. Instructions Free. **KEYSTONE EARTHWORM HATCHERY, 15 N. 30th, Harrisburg, Pa.**

Again our "Once a Year Offer." Just what you've been waiting for! Write, without delay, **VIRGINIA EARTHWORM FARM, Cherry Hill, Route 4, Roanoke, Va.**

MODEL BOX SETUP, including 600 mature SOILUTION earthworms, capsules and culture, $7.00. Prepaid. FINE FOR BEGINNERS. Breeders, 200—$2.00. Instructions. **NATURE'S SOIL BUILDERS, 1544 Spring Garden, Lakewood, Ohio.**

GARDEN SUCCESSFULLY WITH EARTHWORMS. WRITE now for FREE instructions and EXCITING OFFER. **CAPITAL EARTHWORM FARM, Dept. O., 2514 Fourth Street South, Arlington, Virginia (CH 4121)**

"EARTHWORM NEWS", "PROPAGATION & USE", many valuable circulars, secrets of 15 years' experience, FREE. Write for all-time LOW prices now effective. Start successfully, easily. **CALDWELL, Barwick, Georgia.**

HARDY EARTHWORMS raised in outdoor pits. Hand Picked, counted and packed with food for two weeks. Live delivery guaranteed. Write for prices. **FLOYD WICKELL, Mt. Sterling, Ohio.**

EARTHWORMS—Hardy outside pit raised earthworms. Guaranteed alive on delivery. Price and information sent on request. **DR. BATES AND TRAPP WORM FARM, 2424 Sullivant Ave., Columbus 4, Ohio.**

To obtain the most from your soil use EARTHWORMS. Folder and special offer sent on request. **EDMONDSON HATCHERY, 118 Mirabeau St., Greenfield, Ohio.**

English MANURE WORMS, Satisfied customers say they're best of all. Convert green manure, garbage, directly into Humus without composting. Free pamphlet tells why. 500-$3.00, $5.00 thousand postpaid. **PHILLIPS WORM FARM, Box 22, Bessemer, Ala.**

50 to 100 WORMS

PER TREE assures well balanced subterra life and helps break down organic matter for root assimilation. Healthier trees, a better foliage will be yours with earthworms from Stow. Earthworm castings and basic mixture available. WRITE TODAY for information.

STOW EARTHWORM FARM
KENT, OHIO

DOMESTICATED EARTHWORMS: Select breeders 500 for $4.00—1,000 for $7.00. Culture $7.00 per gallon. Castings $2.75 per gallon. Cash orders prepaid. Free instructions with orders. Live delivery. **EBWOOD EARTHWORM HATCHERY, Box 63, Amherst, Wisconsin.**

FERTILIZE your garden nature's way. Raise Earthworms. We tell you how. Shipped direct from our farm in Maryland. $7.00 per 1000. **JAMES VETTRAINO, 5826 Harding, Detroit 13, Mich.**

EARTHWORMS—nature's own soilbuilders. Get your start, then breed your own. They work without pay. Write for prices and instructions. **ARCHIBALD'S Abingdon, Illinois.**

OZARK WIGGLER EARTHWORMS. They will survive transplanting in any soil. Write for descriptive literature and prices. **LAKE-HAVEN EARTHWORM HATCHERY, East 7th Street Road, Box 130-B, Joplin, Missouri.**

HYBRID EARTHWORMS: Mature size, hand picked. $4.50 per thousand, delivered. Live delivery guaranteed. Free instructions. **TEXAS EARTHWORM HATCHERY, Box 263, Bartlett, Texas.**

"HARNESSING THE EARTHWORM." Life story of the author, "An Earthworm Turned His Life," mailed free. Write **DR. THOS. J. BARRETT, Dept. 24, Sun Valley, Calif.**

Do you want to live to be 100?

PREVENTION, the new monthly magazine edited by J. I. Rodale, will try to show you how to live to a ripe old age **in full possession of your mental and physical faculties. PREVENTION** is seeking a practical route to the fountain of youth.

The exciting June issue, devoted solely to the cause and prevention of polio ("infantile" paralysis), was a revelation to thousands. There will be many similar numbers dealing with single subjects—colds, headaches, bread, overweight, etc. But most issues will take in a diversified, well-rounded field of health conservation, stressing both positive and negative health factors in our everyday .occupations. .Food, .worry, sleep, posture, digestion, exercise, elimination, mental attitudes, medicine, diet **—everything that can possibly help you avoid illness or chronic diseases or senile infirmity will be within the scope of this amazing magazine.**

PREVENTION

is made up of fascinating articles and reports by and about physicians and medical research workers. No important health topic will be lost sight of, for **PREVENTION** will keep its readers posted on the latest authentic information—**material largely unavailable to the general public!**

Do you want to keep healthy?

Subscribe Today to PREVENTION!

Consider the cost not as a subscription to a magazine, but as a medical fee to enable you to stay healthy. A year of **PREVENTION** is worth a decade of cure.

You need send no money; we will be glad to mail a bill. Simply fill out the coupon, and mail it NOW.

PREVENTION MAGAZINE
c/o ORGANIC GARDENING, Dept. 8G
EMMAUS, PA.

Please enter my subscription for
1 year $3 ☐ 2 years $5 ☐
3 years $6 ☐ 5 years $8 ☐

Name .....
Address .....
.....
City ..... State .....

$1 LIMITED TRIAL OFFER! $1

★ HULLED SUNFLOWER SEEDS

Organically grown, hand-selected, tender kernels. AT $1 A POUND - POSTPAID ★ 5 LB. LIMIT!

★ HULLED SESAME SEEDS

Finest quality, freshly hulled in U.S.A. Delicious flavor, rich in organic minerals, vitamins, lecithin. 20 OZ. $1 POSTPAID. 3 LBS. $2 ★ 6 LB. LIMIT!

★ MILLET-SUNFLOWER MEAL

The new, vitamin-filled alkaline cereal made from hulled millet and organically grown sunflower seeds. 1½ LBS. $1 POSTPAID. ★ 3 LB. LIMIT!

★ PURE RAW WHEAT GERM

Rich in organic minerals and vitamins B and E so vitally necessary for mental alertness and vigor. Will aid proper blood regeneration, stimulating normal replacement of worn out cells, delaying senility.

2½ LBS. $1 POSTPAID. ★ 5 LB. LIMIT!

● IMPORTANT NOTICE ●

Do you realize that many foods attractively offered and innocently purchased by you may be seriously harmful to your health? BE SAFE! Protect your health by learning what to avoid, what to buy in:

"How to Eat Safely in A Poisoned World"

by ANTON H. JENSEN Price: $1.00 Postpaid.

32 BOOKLETS—1,024 PAGES—$1.00 POSTPAID!

We've saved our most sensational offer for the last! This series of 32 booklets on the subject of health and right living, covering every phase of natural health in harmony with the best teachings in the field, is offered to you with our FREE literature on Natural Health Foods, Health Aids & Stone-ground, Organic Flours and Cereals. Only a limited number of sets are available. Do not delay; Rush your order Today!

Whole Grain Flour Mills

Dept OG-80. 2811 N. Jones St., Chicago 47, Ill.

Hybrid Earthworms

EARTHWORM CULTURE (eggs, worms and castings) builds and conditions soil, no other fertilizer needed, no hand-turning of compost. They multiply rapidly. DO NOT MIGRATE. Better health for plants and man. Send $1.00 for 100, $10.00 for 1500. Additional savings on larger amounts. FREE information on request. Full instructions with each order.

SUNSET ACRES, GOLD HILL, OREGON

NOW—anyone can RAISE WORMS

Send for your "WORMS UNLIMITED" pamphlet that tells why and how earthworms can be raised for pleasure and profit. No charge—no obligation—just send your name to

POLSON ENTERPRISES

1108 Leland Ave. Chicago 40, Ill.

PUT EARTHWORMS TO WORK NOW!

You, too, can have bigger and better vegetables, fruits, flowers if you "plant" earthworms, use castings to enrich soil. Send today for booklet on transforming organic waste into wealth. 10c for mailing, please.

GRO-MOR EARTHWORM HATCHERY

BOX 25 ROCHESTER 11, N. Y.

Be The First

in your territory with the nationally famous Vi-Vita health food line. Generous commissions enable you to build a steady repeat lifetime business. Complete details and price lists free.

VEGETABLE PRODUCTS CO.

BOX 1204-LL SYRACUSE, N. Y.

SUNFLOWER SEEDS
GIANT "MANCHOURIAN"
20 oz...$ 1.00 - 5 lbs...$ 3.00
Fresh packed - Postpaid
FREE - Complete guide of organic food specialties.
SCHIFF-BIO
DEPT. G-8 JERSEY CITY 3, N.J.

FERTILIZERS-SOIL CONDITIONERS

HUMUS—non-acid, natural peat—per cu. yd. $6.00. Smaller amounts available. AT YOUR SERVICE, 9 Catoonah Street, Ridgefield, Conn. Phone 675-J2.

HEALTH CONDUCING Colloidal Minerals for soil or compost culture. Over twenty elements. None toxic. Nutrition from the ground up. "BRABON" RESEARCH for HEALTH, Telford, Pa.

POULTRY MANURE: 100 lbs. in 50-lb. bags $2.00; 500 lbs. in 50-lb bags $9.00; 1000 lbs. in 50-lb bags $16.00; 2000 lbs. in 50-lb bags $25.00. DIAMOND STATE EVERGREEN CO., Milton, Del.

HOW TO MAKE YOUR OWN SOILMIXTURE AND RE-POT HOUSEPLANTS. New booklet describes soil-mixture for over 50 of the most common houseplants. A helpful, easy guide for anyone interested in having healthy and beautiful house plants. One dollar. Money back guarantee if not satisfied within 5 days. EBMYD, Thiensville, Wisconsin.

NATURAL ROCK PHOSPHATE—Finely ground from high-test Western phosphate rock. Ideal for Organic farming and gardening. Distributed in California by WESTERN FARM CHEMICAL COMPANY, Box 217, Walnut Grove, California.

FOODS

Our fresh stoneground flours, cereals retain 100% wholegrain values. Only finest grains used. Dried, unsulphured fruits. California orange honey, free from drugs. Free price list. W. B. Newby, Hemet, Calif.

SUN DRIED FRUITS, unprocessed, unsulphured, unsprayed, unchemicalized, 10 lb. boxes, Peaches $3.40, Pears $3.60, Mission Figs $2.60, White Calimyrna Figs $3.50, Assorted $3.40. Natural Dates, 5 lbs. $1.75. Large, Shelled Almonds, 5 lbs. $3.75. Raw, whole Cashews, 5 lbs. $3.95. Unheated, unrefined, Calif. Virgin Olive Oil, gallon $4.40. Unheated, Calif. Mountain Sage honey, 5 lbs. $1.25. Please remit. Expressage collected. S. H. JAFFE (C), Lakeside, California.

GOOD DESERT HONEY, Two pounds, $2.50. All-comb, $3.00. Postage prepaid. G. C. Christensen, Box 266, Marathon, Texas.

HONEY: Delicious Florida orange blossom, 2½ lbs. postage paid $1.00. 10 lbs. postage paid $3.75. NELSON L. WHEELER, St. Cloud, Florida.

SESAME SEED—natural, flavorful, easily digested alkaline food. Richest in lecithin, organic minerals, vitamins. Roberts' Sesame Seed Butter $1.00 lb., Virgin Sesame Oil $1.00 pint; Hulled Sesame Seeds 3 lbs. $2.00 postpaid. ROBERT ORGANIC FOODS, 613 Washington Ave., Brooklyn 16, N. Y.

WE MILL Stone ground Whole Wheat, Cornmeal, Millet, Soy flour unbleached White. Sell hand flour mills, Shredding Devices Juicers. GROSE, Box 609, Lodi, Calif.

You'll Go Wild Over YUM YUM. Lora Lee's Indian Fruit Drink. It's impolite to smack your lips, you can't help it with YUM YUM! Skillfully blended, organic wild fruits and berries make YUM YUM nature's finest drink. Quart (makes fifty glasses) $2.00. Money Back Guarantee. Postpaid. YUM YUM PRODUCTS, 3500 Parnell Road, Ft. Wayne, Ind.

BUSINESS OPPORTUNITIES

For information about MELBOURNE VILLAGE, a planned community of productive homes and creative living with special emphasis on Organic Gardening, write AMERICAN HOME FOUNDATION, Box 696, Melbourne, Fla.

"Well Equipped Established organic farm wants working partner, some capital required. Comfortable apartment in well heated home, unlimited pure water. CLARENCE HOLDEN, R 3, Brattleboro, Vermont.

STORE for Sale to party interested in Organic Gardening methods in relation to health. Good location. $4,000.00 down payment, balance on reasonable terms. Write for particulars. E. E. PRESLEY, Hi Land Lake Store, Pinckney, Michigan.

FREE BOOK "505 Odd, Successful Businesses." $250 Week reported! Work home. Expect something Odd! PACIFIC, Oceanside, Calif.

BIG DIVIDENDS, PROFITS and SATISFACTION for persons assisting us financially in launching 100% Organic Gardening Subdivision. Absolutely Safe. Write: C. A. TRAUB, 306 E. Garvey, Monterey Park, Calif.

DISTRIBUTE SUBSCRIPTION-GETTING BOOKLETS. Help spread the organic message. Nothing to sell. Merely hand out these booklets to likely subscriber prospects of Organic Gardening Magazine. Coded coupon permits us to trace source of subscription to your efforts. Liberal commission. See page 64 for complete story.

REAL ESTATE FOR SALE

22 Miles From Washington, D. C. 90 acres, 1/3 clear; 2 streams; attractive modern stone house; tenant house; outbuildings. Many bearing age, organically grown fruits and berries. Large quantities of humus on property—possible business opportunity. Excellent for organic food farm. $32,500. C. WAHLER, Clifton, Virginia.

IRISH WOOLENS

Vacationing in New England? Do stop and see my lovely AVOCA HANDWOVEN IRISH TWEEDS AND BLANKETS. CAROL BROWN, Phone 46-2, Putney, southeastern Vermont, U.S. Rt. 5.

HELP WANTED

Would You Care to Spend Fall or Winter on organic Fruit ranch—fishing—hunting—outdoor living—one hour from ocean. EVERMAY RANCH, Saratoga, California.

SALESMEN WANTED

NEW COMPANY with complete line of organic farm and garden materials, desires salesmen in West Virginia and Maryland who are interested in the theory of Organic farming and gardening. Write at once for interview. THE ATLANTIC ORGANIC COMPANY, P.O. Box 312, Williamsport, Md.

MONEY MAKING ACTIVITIES

FREE BOOK "505 Odd, Successful Businesses." $250 Week reported! Work home. Expect something Odd! PACIFIC, Oceanside, Calif.

MISCELLANEOUS

IT'S NO SECRET!!! America's finest families are sending their silver to us for repair and silverplating service. Free estimate and literature. DETROIT SILVERSMITH COMPANY, 19044 Livernois, Detroit 21, Michigan.

CLOGGED and OVERFLOWING CESSPOOLS and Septic Tanks are a health menace. No need to employ expensive pumping methods. Simply apply 100 lb. drum of SUR-SOLVENT to reduce the solid content and clean the pores in the ground surrounding the cesspool, thereby allowing the proper leaching of the water. Write for descriptive literature and how to start fermentation in your cesspool or septic tank. ELECTRIC SEWER CLEANING COMPANY, 294 Lincoln St., Allston 34, Mass.

ORGANIC GARDENING BACK NUMBERS WANTED

Want Back Numbers of ORGANIC GARDENING. All Issues Before 1946. Write Stating Price. JOHN M. STOPINSKI, Drawer 369, Winter Garden, Florida.

VACATIONING

SKYDORE'S ALWAYS FILLED! Advance Reservations Necessary OUR GRAPE CURE INSURES HEALTH-YOUTH and LONGEVITY. Acid Alkaline Balance Restored by Nature. Supervised Nutrition going into and coming out of Grape Fast. All foods and grapes Organically grown. Special rates for 3 weeks. Dept. OG SKYDORE Wrightwood, California Supervision of Kay Mullendore D.D. "ORGANIC NUTRITION GUIDE" just off Press $1.85 Postpaid.

If you wish to buy or sell organically-grown foods send advertising copy to Organic Gardening, 46 S. West Street, Allentown, Pa. The purpose of the Trading Post is to bring together the buyer and seller of organically-grown food products. Rates are 21c a word. Minimum 25 words, or $5.25. Payable in advance. Include name and address in word count.

ORGANIC TRADING POST

SHIPPING NOW! Why buy inferior vegetables when we can supply premium produce at fair prices. GERICKE'S ORGANIC FARM, 2276 Arthur Kill Road, Staten Island 9, N. Y.

WALNUT ACRES NEW WHEAT CROP HARVESTED—now strawberry jam and honey. Home-grown, organically raised, stone-ground wheat, rye, corn, buckwheat flours, cereals. PAUL KEENE, Penns Creek, Penna.

ORGANICALLY GROWN WHEAT processed into 100% whole wheat and cereal containing all the original vitamins and mineral salts of the wheat berry. Trial 5 lb. bags of flour or cereal sent postpaid for $1.00. LOU-HELEN RANCH, Davison, Mich.

ORGANICALLY GROWN SWEET CORN. Excellent for freezing. Shipped fresh, express collect $2.00 bushel. Send for list melons and potatoes. MERRYVALE FARM, Route 3, Brattleboro, Vermont.

Native Shrubs for Ornamental Plantings

BUTTON BUSH

(Cephalanthus occidentalis)

THE NATURE lover will do well to explore the marshy ground and banks of quiet streams in August. Even before he sees the plants he will become aware of an unusual, delicate fragrance which permeates the atmosphere. More than likely this fragrance will be found to be emanating from hundreds of small, creamy-white flower-balls that dangle in clusters on long stems from the gracefully drooping branches of low, rounded bushes. These shrubs are button bushes with their small flowers arranged in globose heads. The fragrance of these flowers seems to be one of the greatest delights of bees and butterflies, which hover over them to partake of the natural sweetness found so abundantly supplied deep in their nectar wells.

Although this plant is at home in swamps, it is perfectly capable of living in ordinary garden soils and is hardy over most of the United States, blooming from August to late September. This beautiful, fragrant shrub deserves a place in your garden. In many respects it is more ornamental than many of the cultivated shrubs. It is especially desirable in that it blooms in late summer when relatively few other shrubs are in bloom. It will do well in almost any location in your garden but if you have a pool or stream, button bush will more than repay you for remembering that it is by nature a water-loving plant.

Build a Library of Gardening Books via the Organic Gardening 20% DISCOUNT PLAN

Here's how you benefit:

When you order the *Organic Gardening* Book of the Month, *plus at least one additional book* listed at the right, *you get a* 20% DISCOUNT *on your entire order.* This is your opportunity to build a helpful Organicultural library at unusually low cost. *Note*: Discount Plan order for the August Book of the Month will be accepted only during August and September 1950. On this special offer, open only to *Organic Gardening* subscribers, payment must accompany order.

The Book of the Month for August is

Humus and the Farmer

by Friend Sykes

Many years ago the author sold his property in the fertile Thames valley and bought land in Wiltshire at $5.00 an acre—land that was utterly barren. On these 750 waste acres Sykes relied completely on the organic method, using no commercial fertilizers. His farm is now one of the most fertile in the country. He describes here the exact methods of cultivation which worked the "miracle." "Anyone concerned with the productivity of land will be well repaid by a careful reading of this book"—*St. Louis Post-Dispatch.* 375 pp., 37 photos. Regularly **$4.50.**

O 12 50 1YR 512851 F4F
LIBRARY
PURDUE UNIVERSITY
LAFAYETTE IND

Example of the Discount Plan:

If you purchase "Humus and the Farmer" and "The Healthy Hunzas," you take the 20% discount on $7.50 and send only $6.00—a saving of $1.50! *The more books you buy when you buy the book of the month, the greater your cash saving.* And at the same time you are adding helpful, fascinating, authoritative books to your library, all written or endorsed by J. I. Rodale, editor of *Organic Gardening.*

MAIL YOUR ORDER TO

BOOK OF THE MONTH DEPT.

Organic Gardening

EMMAUS, PENNSYLVANIA

Any of these ORGANIC GARDENING books may be used to complete your DISCOUNT PLAN:

THE HEALTHY HUNZAS

by J. I. Rodale

True story of a cancer-free people who return all residues to the soil. Gives full details. 263 pp., 20 photos. **$3.00.**

THE EARTH'S GREEN CARPET

by Louise E. Howard

The increase of degenerative diseases is a result of soil depletion by artificial fertilizers. Only a living soil is productive. 260 pp. **$3.00.**

STONE MULCHING IN THE GARDEN

by J. I. Rodale

Eliminate cultivating and weeding and obtain better yields. A gardening innovation! 164 pp., 50 photos. **$3.00.**

FARMERS OF FORTY CENTURIES

by F. H. King

How compost farming and gardening have enabled the crowded Orient to feed itself and keep its lands fertile—a lesson for us all. 384 pp., 209 photos. **$4.00.**

MEMOIRS OF A ROSE MAN

by J. Horace McFarland

The horticultural ideas and personal reminiscences of America's greatest champion of the rose. Preface by L. H. Bailey. 160 pp., many photos. **$3.00.**

TREES AND TOADSTOOLS

by M. C. Rayner, D. Sc.

Deals with their fundamental but little understood relationship. 122 pp., 18 full-page photographs. **$2.50.**

THE EARTH'S FACE & Human Destiny

by Dr. Ehrenfried Pfeiffer

A beautiful landscape is an index of a *living* soil. The author warns against agricultural practices which destroy the soil. 183 pp., 60 illus. **$2.75.**

THE PRUNING BOOK

by Gustave L. Wittrock

Deals with all kinds of shrubs and trees, tells not only *how* to prune, but *when.* 166 pp., diagrams, photos. **$3.00.**